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NewTekNIQUES

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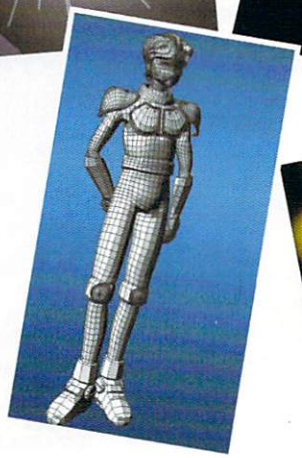

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ON THE COVER:

This issue's cover was designed by Kyle Anderson, one of the principal leaders in the "Mission to Avalon" project. The character featured is Starr, who is the 15-year old female lead in the series. Besides having special training in vehicles, Starr is the Air Cycle Champion on Earth. She is also the chief officer for Earth Sciences in the Mech Patrol division.

TekTALK

OUR EDITOR'S OPINIONS ON IMPORTANT NEWTEK ISSUES

BY JOE TRACY

Important information on valuable changes being made to *NewTekniques*.

Make Sure You Have Both Shoes On!
STRUCTURING NEWTEKNIQUES

NewTekniques is undergoing some major changes and a new direction to better meet your needs. Foremost in this new direction is that the magazine is no longer just a print publication! Just over half of the magazine content is now only available on the Web. When you bring the print and Web portions together, you get the complete *NewTekniques* magazine.

Wear Both Shoes!

NewTekniques strategic new direction could best be described as a pair of shoes. One fits your left foot (the print publication) and the other your right (the Web publication), but both work together for the same purpose. Just like it would be awkward to walk around with only one shoe, it is equally awkward to think of *NewTekniques* as a print-only or Web-only publication. It is now both.

The Changes

We experimented with this new direction in the last issue when we moved a few columns (like ShortTakes) to the Web, along with bonus reviews and tutorials. The feedback we received from readers was excellent, allowing us to more fully implement the final plans with this issue. From now on, ShortTakes, Premieres, and Reviews will be a part of the reader-only Web area, and will not appear in the print magazine. At the same time, the print side will focus more on tutorials and tutorial-oriented columns.

The Benefits

We live in a technology age where readers demand instant information. So why wait two months for product information? You need the information now. By moving areas like Premieres into a reader-only area online, we are able to update it the same day that a new product is announced! Furthermore, we can give you more pictures and more than a 150-word description, so that you have a clearer understanding of the product. Reviews will no longer be limited to 600 words and news will be more up-to-the-minute. In essence, we've moved the time-sensitive areas of the magazine online while continuing to provide you with tutorial information on the print side.

Another major benefit to the new direction is that we have effectively tripled the size of *NewTekniques!* You are getting three times more content than ever before! Interactivity is also a big bonus of the reader-only online area. For example, in our "Invasion America" article, you can click on the name of a person quoted to instantly get a picture and bio of that person!

Accessing the Site

Your gateway to the online reader-only area of *NewTekniques* is www.newtekniques.com/bonus. From here you will be required to look up a password in this issue in order to access the extra material.

The NewTekniques Experience

We like to refer to the combination of the print publication, reader-only online area, and main *NewTekniques* Web site as *"The NewTekniques Experience."* We try to be more than a publication, staying on top of technology advancements and providing you with information and tutorials of the highest quality in the quickest manner.

Thank You!

Thank you for your continued support of *NewTekniques* and be sure to keep both shoes on!

NewTekniques

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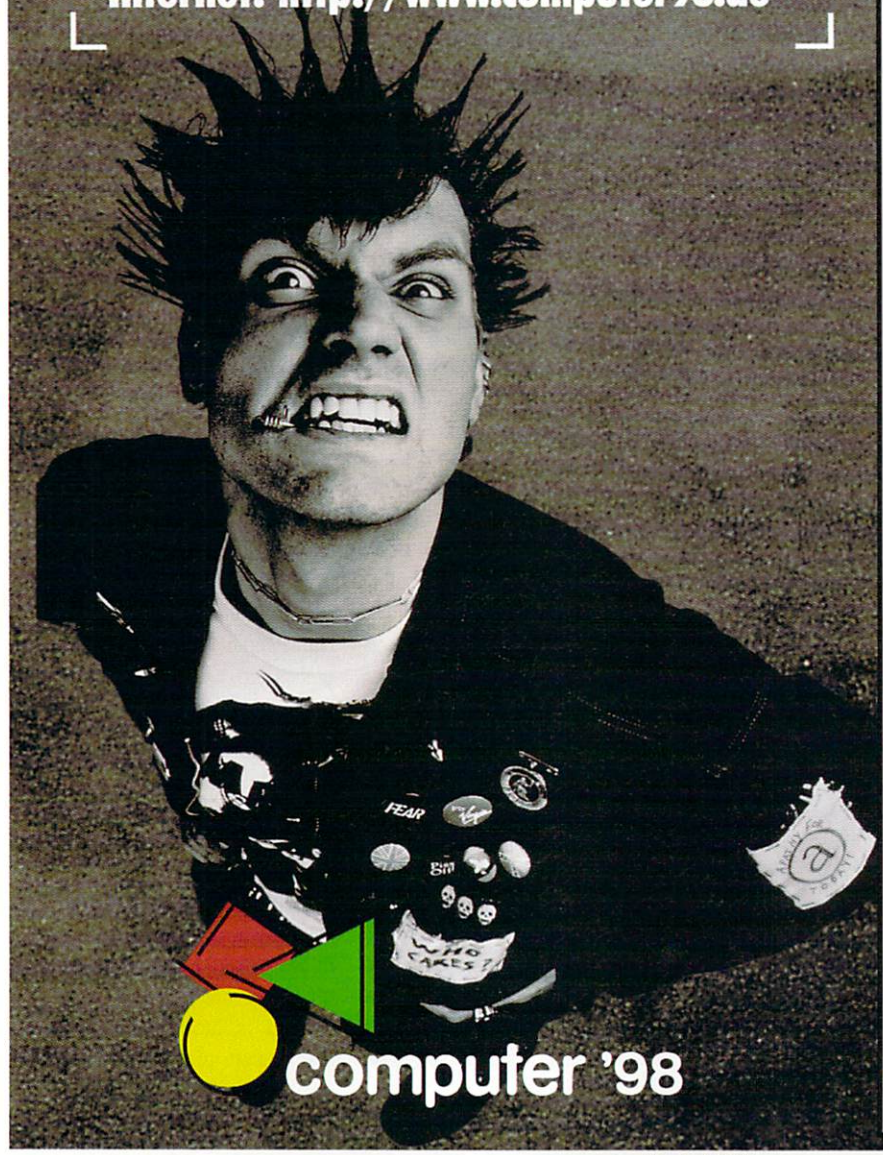

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Plugged In

LIGHTWAVE ADVANCEMENTS THROUGH PLUG-IN SCRIPT WRITING

Enhancing the RADIAL SELECT SCRIPT

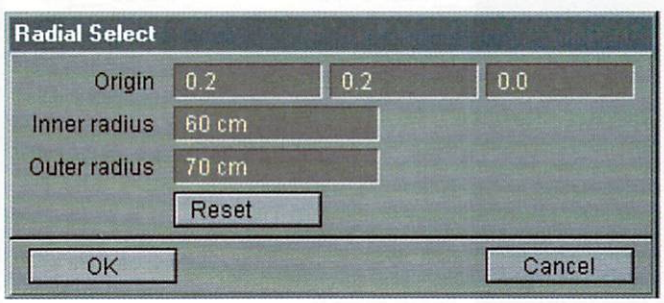
Digging deeper into LScript to enhance a Modeler LScript that allows you to select points radially.

BY BOB HOOD

An LScript that performs a complex or repetitious function can often save you hours of tedious manual work. If this same script were to enable the user to control its behavior, by providing a means of altering the script's operating parameters for instance, then it would add a whole new dimension of usefulness.

In the last column, we examined a Modeler LScript that made possible the task of selecting points in a radial fashion. In effect, we augmented Modeler with a new means of selection. However, our script suffers from a programming syndrome known as "hard coding," wherein operational values are built directly into the source code. In order to alter any of these parameters, you must alter the source code, making for bad code design in anything but a hack or quick prototype. It is time to remedy this design flaw.

Figure 1: The Radial Select requester panel



Putting On A Good Face

The human-computer interface is the subject of many books and lectures, and has become both an art and a science in its own right. If humans could not comfortably and efficiently interface with the tools they create, then most tools would be useless. The same holds true for computers.

The LightWave 3D plug-in architecture provides the means of constructing such an interface, and is commonly referred to as the "requester" system. Plug-ins under both Modeler and Layout have access to this requester system. In the case of Modeler, however, two such systems are available: the built-in requester interface, and the global-class LightWave Panels plug-in. For our current purposes, we will only concern ourselves with Modeler's built-in interface requester system.

Creating a Requester

There is a point in your script's processing when it will make the most sense to request user input. Typically, this will be toward the beginning of the script, before any processing has taken place. Because all requester dialogs in LScript provide the means to cancel any changes to parameters, requesters can also provide the opportunity for users to change their mind about execution. This too should happen as early in the script as possible. Listing 1 is the Radial Select script introduced in the last column. However, this version includes the enhancements that provide a requester

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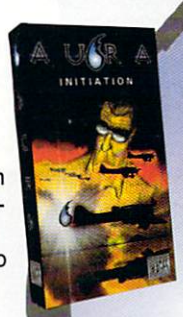

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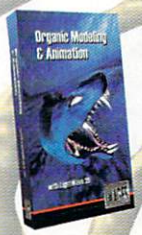

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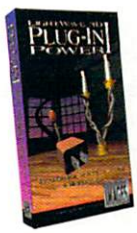

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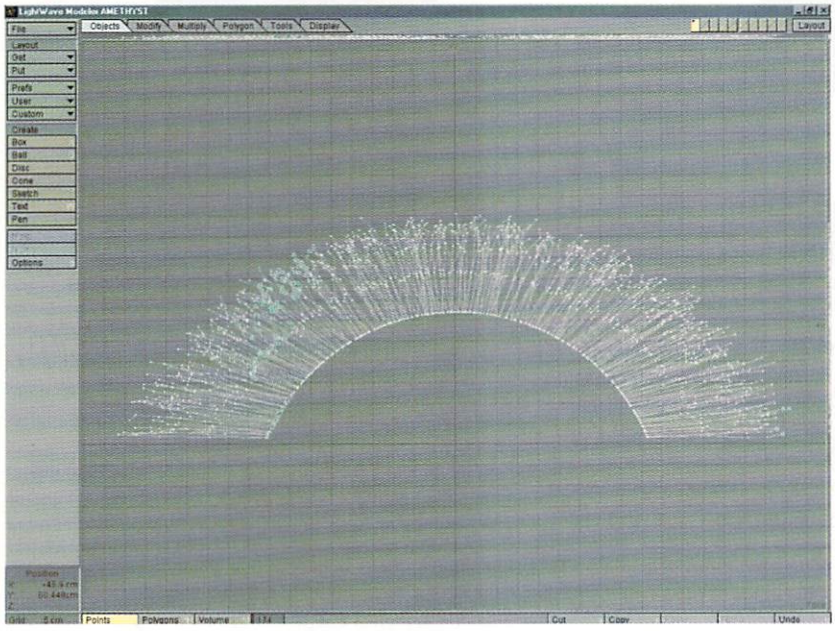

Figure 2: Radial point selection using an origin of <20cm,20cm,0>

interface, as well as the ability to specify an arbitrary center point for the selection spheres.

To initialize a requester in Modeler LScript, you invoke the reqbegin() command (line 10 of Listing 1). This command expects as its first and only parameter a character string that will be used as the requester dialog's title. When you have finished using your requester, you need to let LScript know by invoking the requester shutdown command reqend() on line 25. All of your requester processing will take place between this pair of commands.

Dominating Your Data

A variety of control types are available for use with a requester. Modeler LScript provides controls for doing such things as editing a single line of text, entering vector values, and selecting from a list of choices. Each of these types of controls—as well as others that are available—are documented in the LScript online documentation and release notes.

In order to enhance our Radial Select script, we will provide script users with the means to specify the inner and outer radius used to locate points. We will also offer the user the ability to specify an arbitrary center point, about which the radii will be applied.

Currently, the inner and outer radii values are hard-coded directly into the script. Referring to Listing 1, you will note that we established these values (on lines 6 and 7) by assigning them to variables. Our enhancements have also caused us to add a third variable on line 8 to contain the center point (as a vector) of the selection.

A value contained by a variable can be altered as the script executes (hence, the name 'variable'). Recall from the last column that I placed these values into variables, giving some forethought to making them alterable at some other point in the script.

Our requester will contain three controls; two designed to allow the user to edit a floating-point value, and one that will allow the user to edit a vector value. Requester controls are created by using one of LScript's ctl...() function calls. If controls are created successfully, each of these functions returns the control's identifier. This identifier can be used subsequently to retrieve the control's new value when the user presses the "OK" button on the requester panel.

Referring to the control-creation functions found on lines 12 through 14 of Listing 1, you will note that all take the title of the control as the first parameter. The title is used to describe the control, and will appear to the immediate left of the control's editing field(s) when the control is displayed. The second parameter to all control creation functions is the initial value of the control. By convention, in LScript, this initial value is typically provided through the variable that holds it. For instance, the control created on line 13 is passed the value in the 'inner' variable to set the control's initial value.

Post Script

Once our controls are created, we are ready to post the requester 'panel' so that the user can alter our operational values. We display the panel by calling the reqpost() function. The resulting requester interface is illustrated in *Figure 1*. This function takes no arguments, but returns a Boolean value that indicates to us which of the buttons—either "OK" or "Cancel"—the user pressed to terminate the requester. If the "OK" button was pressed, a Boolean 'true' value is returned by the function. This is interpreted as permission to process the values and press on with our functioning. If, on the other hand, the user presses the "Cancel" button, a 'false' value will be returned by reqpost(). Typically, you will want to end the script should this take place. In this fashion, you allow the user a way out of the script if they so desire.

When you are through with your requester, you need to call the reqend() function. This informs LScript that you will no longer be using your requester panel. It can then discard any internal data or memory it may be maintaining for the requester. This also resets some internal state values within LScript so that it knows that a requester is not lingering on the screen for some reason.

In most LScripts that contain requester interface code you will see the typical structure illustrated by lines 16 through 23 of Listing 1. An immediate test is performed on the return value of reqpost() in the if() state-

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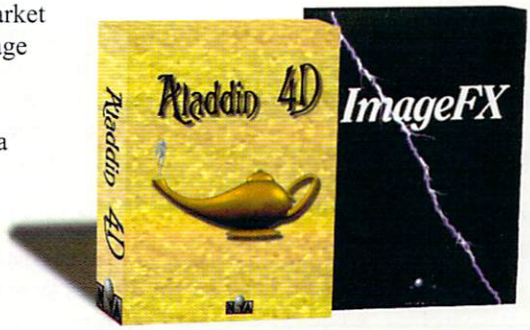

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LISTING 1

```
01: main
02: {
03:    count  pointcount();
04:    if(count  0) return;
05:
06:    inner  .1;
07:    outer  1.5;
08:    origin  0,0,0 ;
09:
10:    reqbegin("Radial Select");
11:
12:    c1  ctlvector("Origin",origin);
13:    c2  ctldistance("Inner radius",inner);
14:    c3  ctldistance("Outer radius",outer);
15:
16:    if(reqpost())
17:    {
18:       origin  getvalue(c1);
19:       inner  getvalue(c2);
20:       outer  getvalue(c3);
21:    }
22:    else
23:       return;
24:
25:    reqend();
26:
27:    editbegin();
28:
29:    for(x  1,y  0;x  count;x  )
30:    {
31:       pnt  pointinfo(points[x]);
32:
33:       dist  vmag(pnt - origin);
34:
35:       if(dist  inner && dist  outer)
36:          pnts[ y]  points[x];
37: }
38:
39: editend();
40:
41: if(!y) return;
42:
43: selmode(USER);
44:
45:    selpoint(CLEAR);
46:    selpoint(SET,POINTID,pnts);
47: }
```

ment. Upon a 'false' return (meaning that "Cancel" was selected), the script executes a return (line 23), effectively ending the execution of the script. The astute reader might wonder at this: "What happens when the reqend() function is not called before the script exits?" LScript tries to set things back to "normal" if it finds that you have left things unfinished when the script terminates. This is true in the case of both requesters and MeshEdit operations.

Change Is Good

In the event that the user wishes to let the script perform (by pressing the "OK" button), you will need to get any values back from your controls that may have been altered. This is accomplished by calling the getvalue() function. By providing the control identifier returned by any of the control-creation functions, getvalue() will return the data that is available from that control. Also, because getvalue() returns data in the format appropriate for the control, you do not have to use a different function for each data type. Conversion of the resulting value is also unnecessary. If the control edits a vector, then getvalue() will return a vector.

No facilities exist in the requester code to allow you to determine which controls have actually been changed. If you really need to know, you must perform comparison operations yourself. However, such comparisons tend to add a lot of excess code to your script, code that you really don't need. With limited exceptions, your script will always function properly if it simply replaces your initial values (stored in variables) with those contained in the control. Among other things, this will make your script easier to read.

Lines 18 through 20 of Listing 1 show how we retrieve our new operational values from the requester before we shut it down. Armed with these new values, we are ready to implement our final change.

Moving Away From Home

In the original Radial Select script, the center point (or origin) of our imaginary selection spheres resides at the "home" position of the universe, which is <0,0,0>. However, this location may not always be practical. The script user may have some special circumstance that requires the center point of the selection to reside elsewhere. We have given them the ability to alter this center point through the requester panel. Now, we must do something with it.

From a selection standpoint, we won't actually move the selection spheres about in 3D space. Instead, we will translate the individual point locations such that their origin—by default at <0,0,0>—effectively becomes that of the center point of the selection spheres. Line 33 of Listing 1 performs this translation on a per-point basis.

You might recall from the last installment that the distance between two points in 3D space can be determined using the Pythagorean Theorem—embodied in the vmag() function. However, the vmag() function only accepts a single vector value. This is because all distance calculations performed by vmag() assume that one of the points is always at the origin of the universe, <0,0,0>.

Therefore, in order to take advantage of this function, we must ensure that one of the two points we wish to measure actually is the origin. This is achieved by subtracting one point from the other, giving us the offset we need to get an accurate measurement.

Figure 2 illustrates the selection that would occur if we were to shift the center point of the selection spheres from <0,0,0> to <20cm, 20cm,0>, using an inner radius of 60 centimeters, and an outer radius of 70 centimeters.

Next Time

In the next installment, I will field user questions—both basic and advanced—regarding Modeler LScript.

Bob Hood is in charge of LightWave 3D's plug-in SDK development for NewTek.

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Flying High

TIPS, TECHNIQUES, TUTORIALS, AND SHORTCUTS FOR YOUR VIDEO TOASTER FLYER PROJECTS

BY JOE TRACY

Flyer Questions and Answers

NEWTEK RISES ABOVE SHORTAGE

Lawsuit. That one word can change a lot within the industry, as we recently found out when a lawsuit against QuikPak brought Amiga4000 production to a halt, and crippled the ability of dealers to deliver systems. Dr. Bernhard Hembach, the German court's ESCOM bankruptcy trustee, filed the lawsuit. *NewTekniques* broke the story online in an investigative report that can be found at www.newtekniques.com/TekTicker.

While this situation has crippled many dealers, a backup plan implemented by NewTek is allowing it to continue delivering complete Flyer workstations as part of its bundle pricing strategy, even though deliveries may be slightly delayed.

For full reports and updates on the situation, stay tuned to the *NewTekniques* TekTicker at www.newtekniques.com/TekTicker, which is updated every weekday by 10 AM.

Questions and Answers

We have quite a batch of questions from Flying High readers, so let's dive right in!

Question: Help! All of my icons no longer show pictures, but only the names with a little frame icon to the left of the name. What did I do and how do I get the pictures back?

Answer: This is actually a feature in the Flyer that allows you to view your icons as either pictures or names. In some situations you may find it easier to view or find clips by name only (*Figure 1*), which also allows more icons to fit on the screen. So NewTek implemented a quick shortcut to change between the two. Just to the right of your spacebar is a key with the letter "A" on it—this is known as the "right-Amiga" key. Hit it once and your icons will immediately change to pictures! Hit it again and it will change back to names. You probably accidentally hit this key, which caused the change. If you go to any of your other directories (like your Effects directory), this feature can also be applied there!

Question: I'm thinking of upgrading my Toaster to a Flyer, but don't know if my system is compatible. Any suggestions?

Answer: Great news! NewTek has created a disk called "Do You Have What It Takes To Fly?" that will tell you if your system is Video Toaster Flyer ready. Best of all, the disk is free! So if you are thinking of upgrading to a Flyer (and now is the best time with NewTek's pricing strategy still in effect), then call 1-800-TOASTER and request that you be sent a copy of the "Do You Have What it Takes To Fly?" disk.

Question: Every time I use a scroll, my project requires 20 extra seconds at the end of the scroll in which it does nothing! I tried "Aussie's CG Scroll Timing Tip" in your book, but it didn't work for me. I need my project to break free one second after the scroll ends, but nothing I do helps.

Answer: Aussie's CG scroll timing tip is an excellent one, but it does require exact precision in

COMMENTS OR SUGGESTIONS
email:
jtracy@
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order to work. If you can't get it to work in your situation, my advice is to record your scroll to tape and then back to the Flyer. This will give you much better control of the scroll in your project and allow you to fade out when you want to!

Question: Whenever I cut a large number of clips, the sequence from the order I cut them is scattered on the drive. Is there a way to force the Flyer to recognize the order in which they are cut?

Answer: Yes. The secret is in how you name the clips. Let's say, for example, that you took a trip to Disneyland and you recorded the clips in the order the events were filmed. In this case, you would make sure that each clip name started with the word "Disneyland."

Then you would add a three-digit number to the end of the name. So the clips would be named "Disneyland001," "Disneyland002," "Disneyland003," etc. When you cut the clips to your drive, they will all be in sequential order.

Question: Some of my clips don't have a picture on them. Instead they have a film frame symbol. Why is this and how do I get a picture on them?

Answer: First, check each clip to make sure it isn't corrupted. Do this by opening the clip in the project window and scrolling through it to make sure it is a perfect record. If you see glitches or other problems, you must immediately delete the clip and any other problem clips. Then you need to move all your clips to another drive, reformat your now empty drive, transfer the clips back and reformat the other drive. This is to be safe, as some clip problems can actually infect other clips in your project like a virus if you don't take care of it immediately! This is a very rare occurrence, however.

Most likely your clips are fine. If this is the case, there is a change-icon procedure you can use in order to change the frame symbol to a picture! Follow these steps, which I am pulling out of pages 6-20 of the "Flyer Mastery Guide—Version 2.0":

1. Go to your ARexx folder and double-click on "Change Icon." You will be presented with a requester asking you to choose a clip to change its icon (*Figure 2*).
2. Click on the drive folder that contains your clip, find the clip, then click on the clip once. The name will appear in the requester. Click OK.
3. You will be presented with a scroll bar. Move the scroll button to the left or right. On your program monitor, you will see it scrubbing through the different pictures on your clip. Stop on the picture you want, then click Continue.
4. To see the finished results, you must "refresh" your drive. Do this by clicking on the drive's folder tab. It will refresh and the new icon will appear on the clip!

Framestores: If a Framestore is missing an icon, you can get it back by loading the Framestore into ToasterPaint and then resaving it.

Question: How come my project length is showing longer than it actually is?

Answer: Your video and audio clips determine the project length. This means that if you have a 10-second video clip in your project and a three-minute audio clip, it will show your total project time as three minutes. But if you edited your audio clip down to 10 seconds then the total appropriate project time of 10 seconds will show.

Question: Sometimes, for no reason, my screen starts jittering. How can I stop this?

Answer: When your screen starts doing the jitters, hit the spacebar and it will stop.

Question: Is NewTek working on Flyer 5.0?

Answer: It is my understanding that NewTek is continuing to improve the Flyer for current Amiga Flyer owners (like you and I). When, where, and what will be included, are the questions to which I do not have the answers.

That wraps up this print edition of "Flying High," but the information doesn't end here.

Remember that *NewTekniques* is now a joint print and Web publication, so there are more goodies for you at www.newtekniques.com/bonus.

Joe Tracy is author of the Flyer Mastery Guide. His Web site is at www.studiovisions.com.

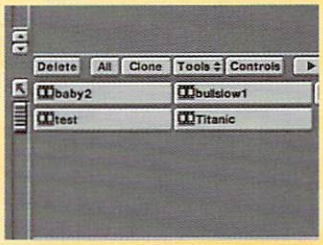


Figure 1

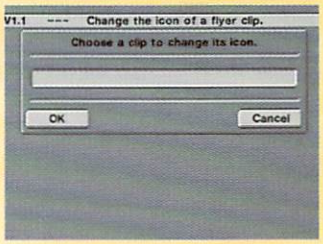
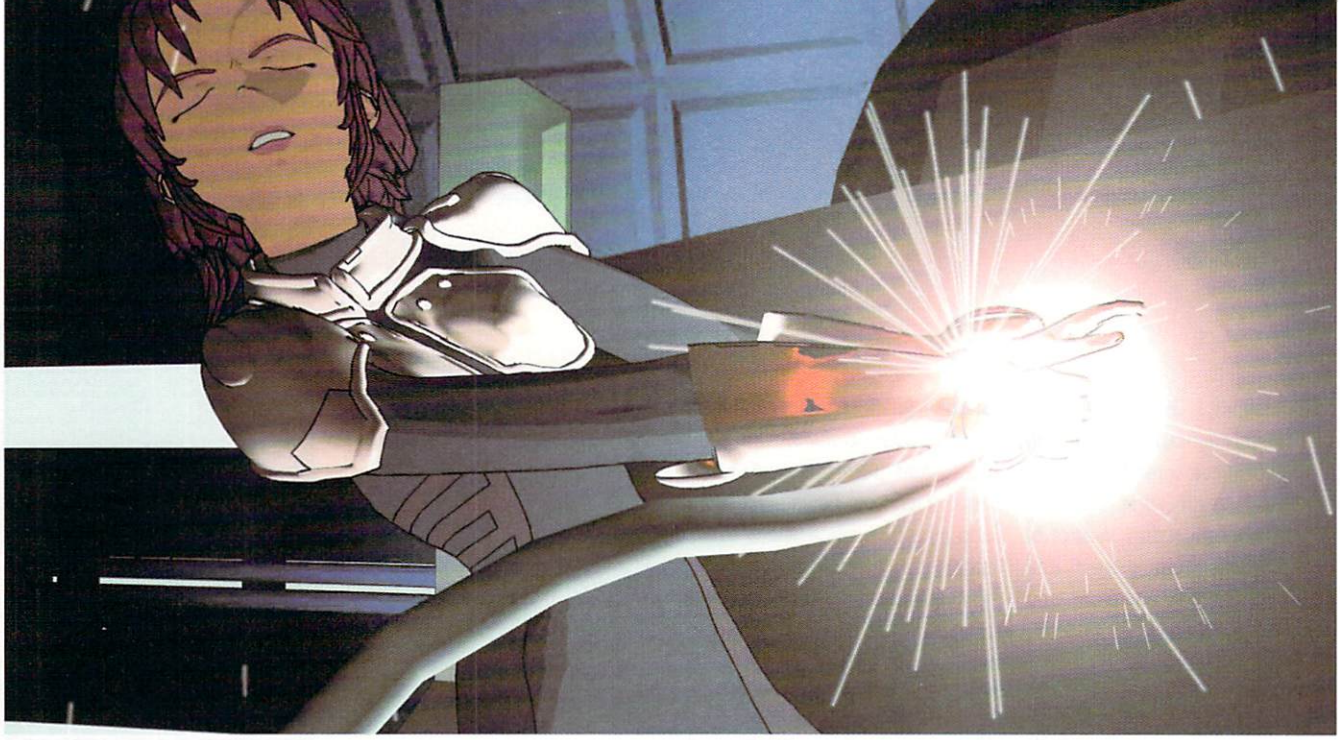


Figure 2



Mission to Avalon

CodeWorks Brings the Dream to Life

By Dick De Jong and Molly Dinkins

Fade in: The year is 2165 and five intrepid adventurers are overcoming seemingly insurmountable obstacles to reach the Alterra, an interplanetary vessel that will take them and thousands of others on a mission to Avalon.

The main "Mission to Avalon" characters. "Avalon" is a new 100% 3D anime style TV cartoon series produced by CodeWorks in Austin, TX. All images were created in LightWave 3D.

Cut to: Present day, Austin, Texas and six dauntless dreamers are prevailing in an alien environment, against all odds, to launch "Mission to Avalon," a LightWave 3D animated children's television series.

In this "art imitates life" scenario, the real life creators are a team from CodeWorks, a division of a multimedia company named Human Code in Austin.

"Mission to Avalon" combines story elements of grand space opera with the strikingly visual style of Anime. Though "Avalon's" artists, Kyle Anderson and Sergio Rosas, have captured the wide-eyed, tousled-hair Anime look, the program does not share the blood-spurting violence often seen in its Japanese counterparts. (See the Anime sidebar: "What Big Eyes You Have.")

"We still have the rule that nobody can shoot anybody," says project leader, Chipp Walters.

This non-violent attitude personifies the origins of "Mission to Avalon." Human Code has a track record of producing award-winning, educational titles for clients like the Discovery Channel. (See the Human Code sidebar: "Multimedia Genes"). The original concept for the project was much more educational and interactive.

"Mission to Avalon" was first conceived as an online program to which children could log on and cooperatively solve ecological problems. The term coined by CodeWorks for the experience was the Interactive Learning Adventure Channel or ILAC. Walters began making the rounds searching for funding for ILAC. After his talks with executives at the Microsoft Network and Electronic Arts, Walters realized that he would need to generate brand recognition to sell ILAC.

"What drives brand recognition is a movie or a TV show," says Walters.

So, in late 1996, Walters brought in Floyd Wray to write a treatment on a story about a Cheyenne space station. "Essentially, the original idea was about growing wheat in space," Wray says.

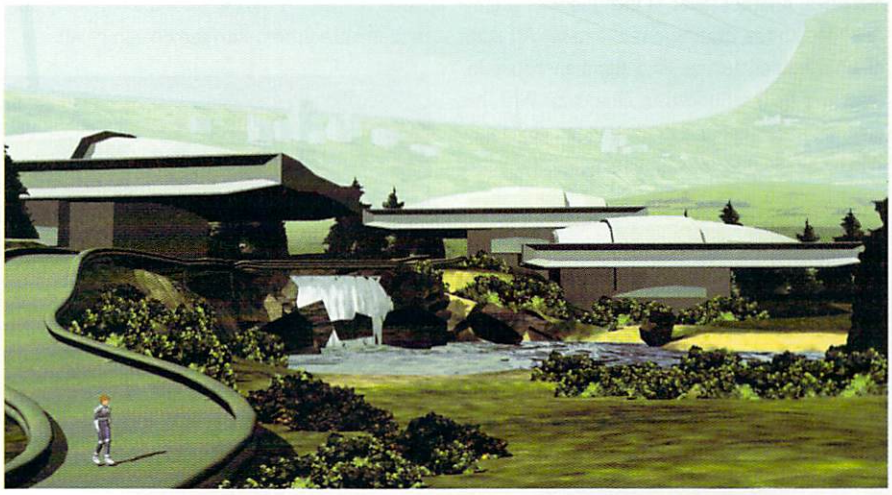
"We wanted the program to teach stewardship of the Earth," says Gary Gattis, an original member of the "Mission to Avalon" team. As they began shopping the series around in Hollywood, the word came back strong and clear—"more action and adventure."

With that admonition in mind, Wray has developed a storyline that he describes as a "blend of 'X-Files' with 'StarTrek.'" Earth is on the brink of ecological meltdown when a message from outer space is received. Oculus, from the planet Avalon, offers to teach the best and brightest youngsters from Earth the techniques to revive the environment.

The TV series begins as our heroes are racing to catch Alterra, the transport to Avalon. Alterra, a giant space ring biozone, contains a wide diversity of terrains and climates and was designed to be a self-sustaining environment for the thousands of children voyagers on this mission to Avalon.

To help maintain Alterra, a legion of robots or mechs are utilized. With designations like Springers, Bashers, and Slashers, the mechs come in a range of shapes and sizes. For the

The Alterra Garden World. Little do the occupants know what is happening beneath them!



LP falls, but is caught by Thomas in a scene from "Mission to Avalon."

most part, they quietly go about their tasks. But a virus is infecting some of the mechs and these Runners can become unstable and dangerous.

The five protagonists are members of the Alterran Mech Patrol (AMP)—the robot maintenance crew and the first line of defense against Runners. Of course, the AMP has cool air cycles on which to cruise around. The five orphans are the usual suspects: LP (the Little Professor), an absentminded genius Science Officer, who happens to be a 6 year old girl; Thomas, 16, the chief Medical Officer and the resident blue-haired hunk; Starr, 15, an air cycle racer, heartthrob, and the Earth Sciences officer; Pinch, 10, the quiet "Second Wave" warrior; and Harlan, 13, the Engineering Officer and mech pet inventor. Harlan's pets are slightly wacky, robotic gremlins with names like Wiza, Skeetch, and Winkie.

As Wray was developing the storyline, he says he "discovered that there was an underworld in the show." Subterra, the dark and mysterious netherworld, lies hidden below the seemingly idyllic Alterran surface. With Subterra, another layer of intrigue was literally added to the dramatic real estate. All sorts of unimagined terrors and fiendish conspiracies lurk in the Subterran shadows. With his cast of characters and multi-layered plot lines, Wray has created a fertile landscape for years of action and adventure.

The Look

When Walters was doing some early research on the project, "I saw these great images of Anime characters on the Net. I went to SIGGRAPH and mentioned these wonderful pictures to Sergio (who was working at another Austin company). He said that they were his. Eventually our paths crossed again and I hired him." Rosas is a huge Anime fan as well as a LightWave 3D whiz. With one fell swoop, the Anime style and the technology to implement that style were set into place.

To realize the visual concept, Anderson transferred over to "Avalon" from a different Human Code department. Anderson, also an Anime enthusiast, brought a strong fine art and industrial design background to the creative visual team. "I had very little 3D experience up to about six months ago. Photoshop was my main tool. Sergio gave me a crash course in LightWave. If I have any questions about LightWave, Sergio has the answers."

As Art Director, Anderson is responsible for the overall look of Alterra, including all the details—every building and robot, every field and stream. At the beginning of the project, he received some guidance from one of his idols. "Syd Mead has been a friend of Chipp's for awhile and he did some early design work on the Alterran spaceship," says Anderson. Mead has been the visual consultant or futurist on *Tron*, *2010*, the original *Star Trek* movie, and *Blade Runner*. "I took a lot of his concepts and implemented them into the design of Alterra."

Anderson has spent a great deal of time thinking about the logic of the superstructure. "One of the things I keep in mind is the consistency of the universe. A lot of stuff in Alterra looks like it can work and has a function. Though first and foremost, it has to look cool and interesting," he says. "If we can maintain our visual quality it should set us apart."

A big part of "Mission to Avalon's" visual identity is the Anime style. Rosas and Anderson have spent hours watching and studying Japanese Anime.

"We look at the composition, the color, the lighting, and the emotional content of the characters. Japanese animators can maintain a level of mood with almost minimal effort," says Anderson.

"At first, we tried to render it all with Cel Shader and it didn't look right," Rosas says. "It had too much contrast. So we tried a combination with realistic 3D backgrounds and cel-shaded characters. It still wasn't quite right. Finally, we found we could get the look if we rendered our backgrounds in 3D but left their textures very flat, with no surface adjustments and with outlines turned on."

The large robots can react unexpectedly when infected with a virus.

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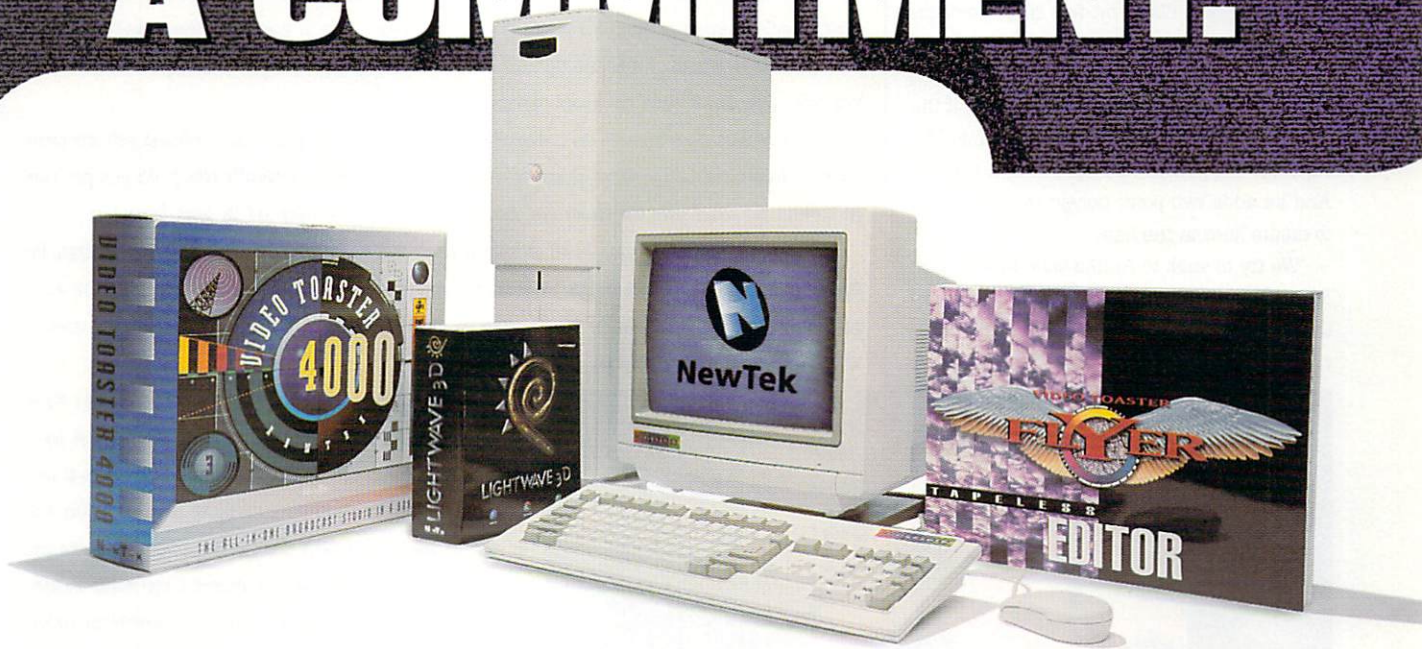

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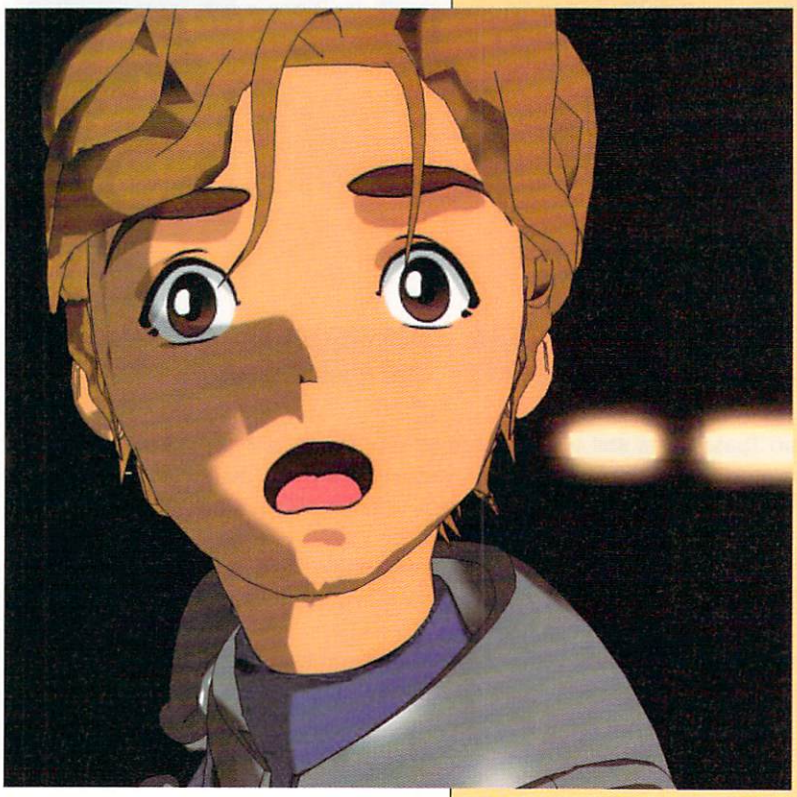
To achieve that signature windswept hair and bangs look, Rosas models simple extruded triangular polygons and sticks them into the skull. "You have to trust Cel Shader. It allows models to be primitive. Actually, if the hair is too refined, it looks like an octopus," he says. For movement, he uses morph targets. And he adds two point polygons to the scalp to create lines in the hair.

"We try to stick to Anime style faces," says Rosas. But often, the Japanese will only use three mouth poses—closed, open, or gaping—and they don't lip sync.



Harlan reacts to something shocking in a scene from "Mission to Avalon." Harlan is 5'8" and 13-years old... in Earth years that is.

"We're using more mouth shapes and are lip synching to the audio. Our heads have no geometry for the eyes or mouth. By keeping the faces flat and mapping 2D images onto them, we get full control over our shaders. And we can come much closer to the Anime look." By using LightWave, the Avalon team has another advantage over traditional 2D Anime. "One of our most powerful tools is the free camera," Wray says. "We can move our

What Big Eyes You Have

Anime is hot. It has millions of fans in Japan and it is generating an equally fervent following around the world. Simply stated, "Anime" is Japanese animation. But nothing about Anime is simple. Unlike its synonym—"Japanimation"—Anime also connotes a style of animation. Notably, the characters are drawn with large expressive eyes, tentacled hair of multiple hues, hard bodies, perky breasts, elastic mouths and minute noses.

Anime storylines are predominantly and traditionally macabre, erotic, and violent fantasies. Complicated plots incorporate intellectual themes from Eastern religion, philosophy, history, and mythology. With unpredictable endings, the good guys often get skewered and heroes rarely live happily ever after. We're not talking *Snow White and the Seven Dwarfs* here.

Anime means big business in Japan. Almost all Japanese people who can read consume comic books (called manga). The Japanese buy an average of fifteen mangas per person per year, spending over two billion dollars. The best of the manga magazines are compiled into books. The favorite books are translated into Anime TV shows and made-for-video movies. A select popular few become feature films.

A flashback into the art history of Japan helps illustrate manga mania. The lineage of mangas can be traced back to ancient Japanese scrolls (up to eighty feet long) that contained ink drawings depicting the passage of time. Calligraphy explaining the stories later accompanied the drawings. Wars, travels, romances, and biographies were ideal panoramic subjects. And, before long, graphic violence and uninhibited sexuality attracted a loyal mature audience.

In the 11th Century, Toba Sojo, a Buddhist priest, enriched the medium when he drew caricatures of men disguised as humorous animals romping through political and social satires. Later, with the advances in wood block printing techniques, these scrolls—some colored, some not—gave way to books. Multiple copies of the cartoons could be printed and hand sewn into booklets. Soon, mangas made their way into the public marketplace.

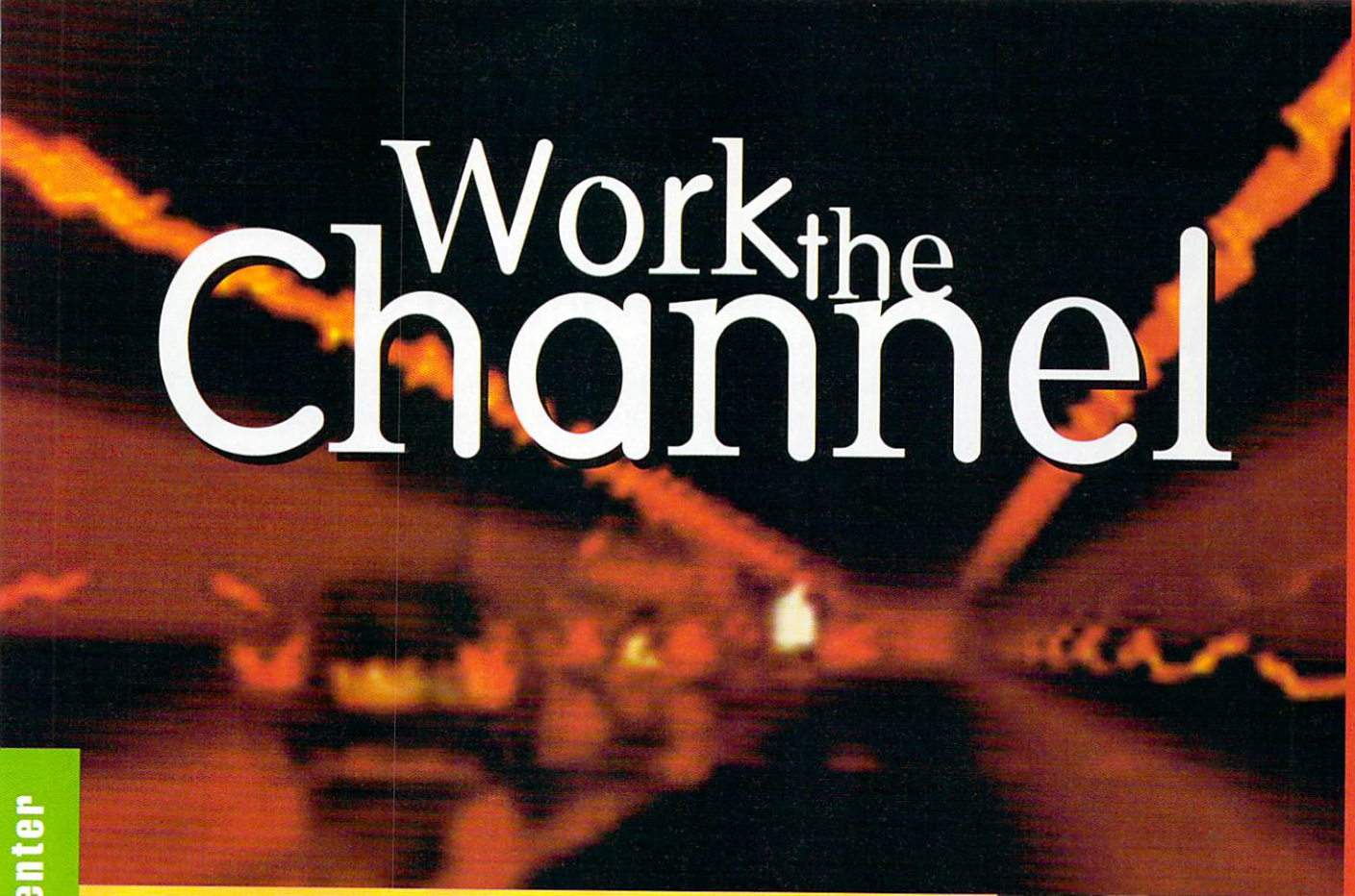
Political cartoons became popular during the 19th and early 20th Centuries. But the artistry of one man, Osamu Tezuka, popularized mangas, broadening their universal appeal to preschoolers as well as intellectuals. Tezuka reigns as the "Father of Anime." He is also called the "Walt Disney of Japan" which explains the mystery of those Anime eyes. Tezuka appropriated those saucer orbs from Uncle Walt because they provided him with a canvas on which to convey feelings. The bigger the eyes, the more expressive his characters became. His eyes were not about race but about emotions.

With a new evocative visual vocabulary, Tezuka expanded his repertoire. A fan of German and French "New Wave" Cinema in the 60's, he took his skills, learned from drawing mangas, and transformed Japanese animation into the beginnings of Anime.

Nowadays, you can find Anime almost everywhere you look. There are Anime toys and even Anime operas. Anime-looking characters are popping up in live action blockbuster films. In the *Fifth Element*, Leeloo is classic Anime style—the hair, the eyes, and the costume. And in *Lost in Space*, take a look at Penny Robinson. Michael Jackson has borrowed the Anime style for his music videos. Come to think of it—the hair, the eyes, the tiny nose—isn't Michael Jackson Anime incarnate?

For an in-depth exposition on Anime, check out Antonia Levi's entertaining, informative tome, "Samurai from Outer Space." Most video stores have a growing section of Anime titles. Rosas and Anderson recommend the following for starters: *Evangelion*, *Ninja Scroll*, *Akira*, and *Macross II Plus*.

Check out the *NewTekniques* Web site reader bonus area—www.newtekniques.com/bonus—for more information on the "Avalon" project and to download the trailer.



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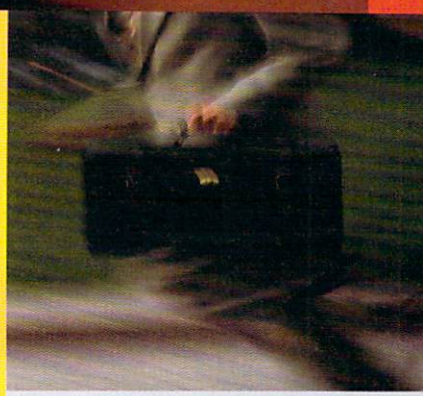

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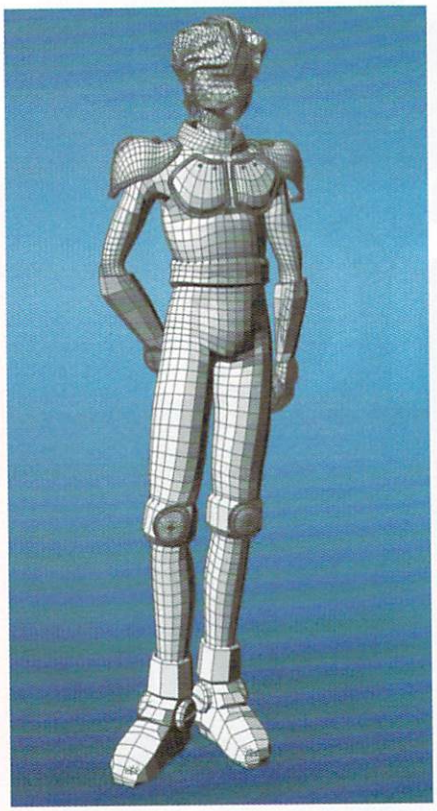

A wireframe version of Harland.

camera around. We're not dealing with a traditional cel flat plane."

To animate the characters, Rosas plans on using PuppetMaster. For some of their more specialized needs, Chris Bohnert of the "Avalon" team is designing in-house plug-ins. "Right now, I'm working on a shatter and explode replacement plug-in," says Bohnert. "We want to make sure that the plug-ins will work over our render farm. I've probably done eight or ten plug-ins already."

"When the plug-ins are tested, we will make them available to other LightWave users free of charge," Walters adds. Stay tuned to the NewTekniques Web site for the link to these plug-ins.

Hollywood is on a Different Planet

Rocketing thousands of children into space is easier than trying to launch a new television series in Hollywood, especially when you're an outsider. "When I started off on this project, everyone, including (Human Code's) board, thought I was a complete nut," says Walters. "This is a 'swing for the fences' kind of project."

Even though Human Code had a great reputation, when Walters started knocking on doors in Hollywood, they were not welcoming him in. "L.A. is a separate world," Wray says. "We discovered it was critical to hire a Hollywood agent. Stu Miller came to South by Southwest and saw our first trailer. He could imagine 'Mission to Avalon's' potential."

The "Mission to Avalon" team produced a new trailer and Miller gave them immediate access to Fox, Saban, Nickelodeon, and DreamWorks. Their trailer raised some eyebrows, but nobody took the bait. "Traditionally, Hollywood likes to do business with people they know," says Mike Tolleson, CodeWork's entertainment lawyer. "A common strategy is to go into the foreign markets first because of the blockage in the American pipeline."

That is exactly what Walters and Wray decided to do. They met with a foreign distributor. "We received two green lights the day we made our pitch. Later we received a call saying that they wanted to fund both the series and the Internet project," Wray says. As this article goes to press, the funding seems imminent.

Though Walters remains cautious until the check is in the bank, the "Mission to Avalon" team is preparing to begin their mission.

Dick De Jong and Molly Dinkins produce video documentaries and animations for Multimedia Associates in Austin, TX, and can be reached at mma@eden.com.

Multimedia Genes

Escaping the insufferable heat suffocating the historic avenue between the Texas capitol and the Colorado River, visitors enter the cool, modern lobby of Human Code. A maze of sixty elegant awards, architecturally framed by see-through shelving, flanks the entry. Unlike the Hollywood animation houses that produce mostly entertainment and advertising, this Austin company focuses on education—for schools, businesses and public entities. For five years, the diverse clientele has included NASA, the San Antonio Art Museum, AT&T, and Time/Life.

When your eyes adjust to the muted lighting, you can see that the office walls are blanketed with charismatic, innovative artwork from some of the company's productions. "Nile: Passage to Egypt," developed for Discovery Channel Multimedia, is an infectious cartoon trip 4000 miles up the Nile and 5000 years down through history. "The Cartoon History of the Universe," a CD-ROM, covers thirteen billion years with seventeen interactive games and 2000 animated cartoons. "AARX/Kronolog II" is a CD-ROM gallery of artist Syd Mead's film work.

Founded in 1993 by Chipp Walters, Liz Walker, and Gary Gattis, Human Code is a design firm dedicated to the art of interactivity. Over the years, it has grown to over 100 employees, now split into three main divisions.

Human Code Austin Studios is the original core group that continues to produce titles for the consumer and educational markets as well as business-to-business applications. Currently they are working on a hush-hush LightWave product for a toy company, that features animated horses.

The company also has a division in Japan, appropriately titled Human Code Japan. Sergio Rosas gave an intensive three month course on LightWave to the artists there, who now are planning their own Anime project.

CodeWorks is the newest division. Along with developing the "Mission to Avalon" TV series, they have recently completed an interactive DVD for Toshiba. Toshiba wanted a high quality title that would demonstrate the interactive capabilities of the new DVD technology. Gary Gattis used the Alterra as a 360 degree virtual environment through which people can navigate. The project consisted of thirty-two CDs of image files and programming code. When the Interactive Learning Adventure Channel gets rolling, CodeWorks plans on producing more DVDs that will complement the ILAC experience.

As the magazine was ready to go to press, another chapter was about to be written in the Avalon adventure. Currently, Human Code is negotiating with Walters to spin off CodeWorks and the "Avalon" project into a separate company. Check the *NewTekniques* Web site for further updates on this cliffhanger.

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From the creators of LightWave 3D

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As a graphics professional, you are expected to create dynamic print ads, multimedia productions, and stunning visuals for the web. Faking it in a 2D package falls short of what you want to deliver. It's time to take the 3D plunge, but you've only found under-powered toys that fall short of getting the job done right.

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Circle #208

LightWave 201

A UNIVERSITY-LEVEL COURSE WITH INCREASINGLY DIFFICULT LIGHTWAVE TECHNIQUES

BY SCOTT WHEELER

The fifth installment in the second level of LightWave courses —"LightWave 201."

Project Bird:

CONSTRUCTING THE COMPOSITE

Welcome back. Its good to see you after the somewhat boring nature of the last class. Hopefully I'll make it up by showing some cool techniques (even some *NewTekniques*). In this class we're going to place our Longhouse in an outdoor environment and light it to match. Then we will be setting up for the last step, making a flock of birds fly into our Longhouse. I know I mentioned last time that we would be using Particle Storm this class. After reviewing the lesson plan, however, I decided to save that for another class.

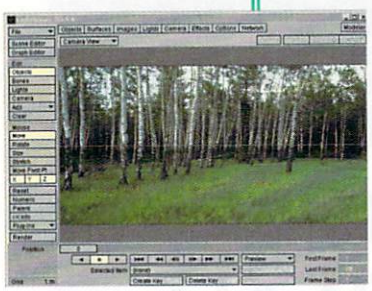


Figure 1

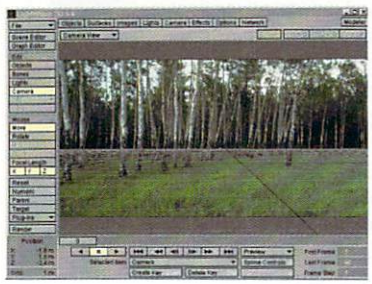


Figure 2

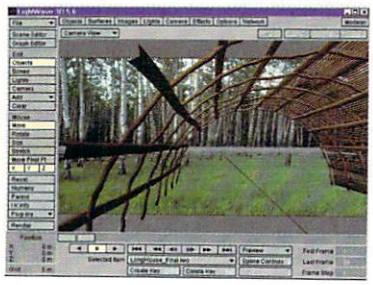


Figure 3

We will be using a series of images to construct our composite. These images can be found on my Web site (www.uberfx.com) and at the *NewTekniques* Web site (www.newtekniques.com/lightwave201). If you can't find them at either of these places, then feel free to drop me an email at uberscott@uberfx.com and I'll send them to you. Now let's fire up LightWave 3D and get to work.

1. The first thing we need to discuss for this stage of the project is Camera settings. What we will be creating is a large format image to pan across. This will, when we add the birds flocking to the Longhouse, give the scene a sense of depth that a straight lock-off camera won't. Go to the Camera Panel. Since the image we will be using as our background is 1338x690, we need to set the Custom Size to that number. The rest of the Camera Settings are as follows :
Pixel Aspect Ratio:
Square Pixels
Antialiasing: Low
Lens Focal Length: 20 mm
Leave all other settings as default.

2. Now let's set up the background. Go to the Images Panel and load in the image we will be using as our background—this image is called BirchTrees.jpg. In the Effects Panel go to the Compositing Tab and set the Background Image to BirchTrees.jpg. This sets BirchTrees.jpg to be the background when we render. We also want to be able to see the image in Layout so we can place our objects in the right place. To accomplish this we need to go to the Options Panel and set, in the Layout View Tab, the Layout Background to BG Image. Close the Options Panel [p]. Your screen should look like *Figure 1*.

With the beginnings of our environment taking shape, let's set our camera in position. This is not as simple as it may seem. Since we are using a generic library image, we have no idea how high the camera was mounted, at what angle it was set, and most importantly, at what lens length the photo was shot. We can overcome the first two obstacles by using the grid as our ground plane. We know by looking at the bottom of our background picture that the camera is not resting on the ground. Therefore it must

either have been held by the photographer or mounted on a tripod. We'll assume our mystery photographer is neither an NBA star nor a jockey so the camera would be mounted at a comfortable height for most people.

3. Activate Camera Edit Mode [Shift - c] and enter the following values for Camera Position:
X: -1.6m Y: 1.5m Z: -2.4

4. We can now see the grid in the lower portion of the screen. To check how good our camera position is, we need to increase the Layout Grid. This is accomplished in the Options Panel's Layout View Tab. Set the Layout Grid to 100x100 and close the panel [p]. Your screen should now look like *Figure 2*.

So far so good. The camera just needs to be nudged down a little bit to line up with the horizon line of this picture.

5. Still in Camera Edit Mode [Shift - c], set the Pitch of the camera to (-2.4) and make a keyframe at frame 0 [Return, Return].

6. This would be a good time to Save [Shift - s] our scene. Call it LongHouse_Pass01.lws. Since this scene will render an element used as part of the finished project, we should name it accordingly. The "_Pass01" gives you an easy way to note which parts need to be rendered first in order to finish the project.

7. Now that we have the background and the camera under control, let's add our Longhouse to the scene. Go to the Objects Panel and load in LongHouse_Final.lwo.

When it is loaded, close the Objects Panel [p]. If all went well several things should have happened. Two images loaded in—HouseTrans.iff and Oldwood_Seamless.iff—and the Grid Square Size jumped from (1m) to (5m) to adjust for the Longhouse. Your screen should resemble *Figure 3*.

8. In order for the whole shot to work, the Longhouse has to look like it belongs in this environment. One of the most important factors is placement. If we put our Longhouse in an area it could not possibly occupy, then no matter what else we do it will look wonky. Wonky is a term used by animators to describe an intangible strangeness about someone's work. For example, Parker said "Hey Scott, your shot looks kinda wonky, man." With that in mind, we will place our Longhouse in a section of the clearing where it fits best. Now, enter in the following values for the Longhouse:

Move
X: 3.9m Y: 500mm Z:13.2
Rotate
Heading: 36 Pitch: 0 Bank: 0
Scale
X: .87 Y: .87 Z: .87

Next, make a keyframe [Return, Return] for our Longhouse.

The trained mind (and after these articles how could yours not be) will notice some things a little strange about the numbers we just entered. The first is that our Longhouse is hovering a half meter off the ground, and the second is its slightly reduced stature. When I was reworking this shot for the article I thought about resetting the position and size of the Longhouse, but I decided that building the shot this way would be more informative. Whenever possible, maintain real world measurements and baselines. If it's easier and faster to cheat, however, then go for it.

9. Render a frame [F9]. Your rendered output should look like *Figure 4*. Okay, one hurdle down. We have our Longhouse in a place that seems reasonable for its size. This leads us to another trick of compositing. The trick is, whenever possible, to place some part of your CG creation behind a real element to make the two blend together better. In this case it will be the tree that now seems to be magically growing out of the center of the structure. In order to put the tree back in front of the Longhouse we need to load another image called BirchTrees_Alpha.iff—shown here as *Figure 5*.

10. Go to the Effects Panel's Compositing Tab and add BirchTrees.jpg as the Foreground Image and BirchTrees_Alpha.iff as the Foreground Alpha Image. Finally, activate the Foreground Fader Alpha checkbox. What the BirchTrees_Alpha.iff image is doing is allowing us to selectively place portions of the BirchTrees.jpg image back on top of our image. The pure white areas of the alpha image are opaque and the pure black areas are transparent. All shades in-between are levels of transparency. A rendered [F9] frame at this point should look like *Figure 6*. As you can see, having a section of the actual photo in front helps blend the two together.

Figure 4

Figure 5

Figure 6

11. The challenge is to make the Longhouse look like it is resting in the grass. For this we need to hop into Modeler. Once inside Modeler, activate the Box Tool in the Objects Tab [Shift - x] and enable numeric input [n]. Input the following values;

LOW
X: -3m Y: -20cm Z: 0m
HIGH
X: 3m Y: 20cm Z: 0m
SEGMENTS
X: 1 Y: 1 Z: 1

Close the numeric requestor and Make [Return] the box.

Figure 7

Figure 8

Figure 9

12. Open the Change Surface Panel and name the box surface GrassBlocker. Click Apply. In the Objects Tab select the Put Pulldown and export the object to Layout as GrassBlocker.lwo.

13. We need to create one more object before we close Modeler. On an empty layer activate the Box Tool again [Shift - x] and enter the following in the Numeric Input [n];

LOW
X: -21m Y: -10m Z: 0m
HIGH
X: 21m Y: 10m Z: 0m
SEGMENTS
X: 1 Y: 1 Z: 1

Close the numeric requestor and Make [Return] the box.

14. Open the Change Surface Panel and name the box surface BackPlate. Click Apply. We don't need this object just yet, so lets save the box (Save As—Shift - s) to disk as BackPlate.lwo.

We can now close down Modeler and return to Layout for the rest of this class. This would also be an excellent time to Save [Shift - s] our scene again.

15. With the GrassBlocker.lwo object, that we created already in Layout, we can turn our attention to surfacing. Open the Surfaces Panel and select GrassBlocker as your Current Surface. What we want to do is create an object that will mask the bottom part of our Longhouse with the background image. Fortunately, LightWave has a texture type that makes this very easy. Open the Color Texture Panel by clicking the T Button on the Surface Color row. Select Front Projection Image Map for your Texture Type. Since our goal is to project the background onto this surface we should add BirchTrees.jpg as our Texture Image. Click Use Texture to save the changes we have made.

16. Moving down the list of surface attributes, we need to change Luminosity to 100% and Diffusion Level to 0%. What this gives us is an object that can be placed anywhere on the screen at any angle, regardless of lighting, and it will always show the background surface.

17. To finish the surfacing we need to add a Transparency Texture Map. Click on the T Button on the Transparency row. Select Planar Image Map as the Texture Type. Click and hold on the Texture Image Popup. At the bottom of the list of images is an item name "load image." Highlight this item and release. This feature is new with version 5.6. Non-5.6 users should add the following image from the Images Panel—find the image named GrassTrans.iff. It should look like *Figure 7*. To fit the image to our surface, click Automatic Sizing. This will ensure that the image fits once across the object on every axis. Our object is a little too wide on the X-Axis for just one instance of the image so we need to change that in Texture Size. Automatic Sizing has set the dimension on the X-Axis to be (6m), which is the length of our object. Since I have painted this image to be seamless on the X-Axis, we can change the value of the X-Axis to (3m) without worrying about a seam. Now our image repeats twice along the X-Axis, giving a denser look to our GrassBlocker.lwo object. Click Use Texture to close the pa]nel.

18. In the Objects Panel, save the GrassBlocker.lwo object so that our surface changes will be retained. Later we will be adding fog to the scene to help blend the object into its environment.

What we don't want to happen is for this object to be affected by any fog. To make sure this does not happen, check the Unaffected by Fog checkbox. Also, we don't want this object to interact in the environment with any other object, so uncheck all of the Shadow options on the bottom of the panel. We need three of these objects to blend the Longhouse into the grass, so click Clone Object and enter 2 for the Number of Clones. Close this panel [p].

19. To move our blockers into the correct positions, activate Object Edit Mode [Shift - o] and enter the following values for the three GrassBlocker.lwo objects;

GrassBlocker.lwo (1)
X: 4.425m Y: 900m Z: 8.625m
H: -50.2 P: 0 B: 1.9
GrassBlocker.lwo (2)
X:650mm Y: 650mm Z:8.975 m
H: 35.5 P: 0 B: 0
GrassBlocker.lwo (3)
X: 1.3 m Y: 700 mm Z: 9.9 m
H: 35.5 P: 0 B: 0

Make sure you set a keyframe [Return, Return] for each of the objects so their movements are saved. If you render [F9] a frame at this point it should look like *Figure 8*.

Notice that, by having the GrassBlocker.lwo objects obscure the bottom of the Longhouse, we have made a huge step forward in making the object live in this environment.

20. To further blend our object into its surroundings we need to add some fog. Open the

Effects Panel and select the Background and Fog Tab. Set the Fog Type to Linear and set the following values;

Minimum Fog Distance: 0m
Maximum Fog Distance: 1m
Minimum Fog Amount: 30%
Maximum Fog Amount: 30%
Backdrop Fog: Checked

What you will notice is that there is no depth to the fog—it spreads out at an even 30% from 1 meter onward. In this case it is not necessary to have the object recede into a fog bank since the distances we are talking about are just not great enough. Therefore, an overall wash of 30% will give us the blending we need. There is a caveat to this, though, and you can see it if you render [F9] an image or take a look at *Figure 9*. Our Longhouse is 30% transparent. This would be fine if we were making an animation about a ghostly Longhouse fabled to appear only to the faithful, but we're not.

11. We need to do several things to fix this problem. To start with, go to the Objects Panel and load in the BackPlate.lwo object we made earlier. We want this object to have the same attributes as GrassBlocker.lwo, so click Unaffected by Fog and deselect all the Shadowing options.

12. In the Surfaces Panel, change the Current Surface to GrassBlocker and render a Surface Sample [s]. We now have a copy of the GrassBlocker surface in the bottom box of the Samples column. We can copy these values into the BackPlate surface by selecting BackPlate as our Current Surface and clicking on the bottom box of the Samples column. We won't be needing the Transparency Map, so remove the Transparency Texture Map by shift-clicking on the T Button next to Transparency. Close the panel [p].

13. To finish with this object move it to the following coordinates:

X: -2 m Y: 2 m Z: 22 m

Since this object is front projection like the grass, it is not necessary to make the entire object visible.

If you were to render a frame now [F9] it would look the same as *Figure 9*, leaving you to wonder why we just added extra work to the project for no reason. Don't fret, the payoff is coming.

14. In the Effects Panel under the Compositing Tab, click and hold on the Background Image Popup. Select "Load Image" and load in BirchTreesFog.iff. This image should look like *Figure 10*. Now, if we render [F9] a frame, our Longhouse is no longer transparent—*Figure 11*. This is because BirchTreesFog.iff is now the fog image and our BackPlate.lwo object is being used as the background image. BirchTreesFog.iff is simply a blurred version of the BirchTrees.jpg image. I have blurred it out so that no recognizable features are left to make our object go transparent—leaving only the tonal ranges of the original image. With this technique we can use higher values of fog than we might otherwise, and it allows you to use something other than a single color fog or color spread with these higher values.

This brings us to the homework portion of this class. We have gone over a lot of ground but we have not discussed an important part of the overall picture—lighting. *Figure 12* shows the final image with completed lighting. Your task is to match this image for next class and to save out your final version to be used in the next class. For continuity's sake, save your final image as LonghousePanorama.iff.

Home Work Hint: Examine the way the light is hitting the birch trees to get an idea of light color and direction. Also, I used four lights and Trace Shadows to get the desired effect.

As always, I am available for questions or comments at uberscott@uberfx.com .

Circle #209

WAVE F/X

LIGHTWAVE SUCCESS IN THE COMPETITIVE TV & FILM F/X MARKET

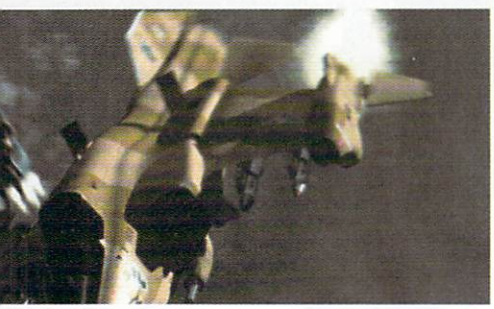
A new project from Foundation Imaging stands to revolutionize the film world, as well as to spur dramatic changes in LightWave's feature set.

BY
GREG NELSON

VORTEX: A LOOK AT THE FUTURE

When it comes to using LightWave 3D, Foundation Imaging in Santa Clara, CA, has always been on the leading edge. They're now working on a new project that's going to change everything—*Vortex*.

Vortex is a full-length feature film and unquestionably one of the most ambitious LightWave projects ever undertaken. Using completely LightWave-generated sets and characters, *Vortex* tells the story of V-Force, a covert military operation whose task is to save an Earth secretly under alien siege.



A pilot ejects from his fighter in Vortex.

With the film, created by Ron Thornton and Steve Berg and directed by John Allardice, the filmmakers are taking an "any shot is possible," approach.

"Ron is writing the script as if this were a live action film," says Allardice. "He'll come in, show me a new version and I'll think 'that's a great shot, I don't know how I'm going to pull it off.'"

As a film, *Vortex* is not yet in production. All I saw was a seven minute trailer designed to promote the concept.

That being said, why do a column on something that does not even exist? The answer—*Vortex* is the future.

Not only is it the future of animation, it's the future of filmmaking. With the 142 shots I saw in the trailer, not only was I impressed by the animation and the execution, I was actually entertained. It did in seven minutes what most movies this summer couldn't do in two hours.

There are several reasons why *Vortex* works so well—the camera work, the character animation, the special effects and NewTek's commitment to making LightWave a better program.

The first thing you notice about *Vortex* is the stunning camera work. "We had one hard and fast rule," says Allardice. "Never put a camera where we can't find a real one." That rule pays off in ultimate image quality, because from a production standpoint, it's just a good filmmaking practice.

Every shot in *Vortex*—Steady-Cam, wing mounted, hand-held, and otherwise, is exactly what you would see on a real set, using a real camera and real equipment.

Vortex's camera work also stands out due to some solid lens choices. "I don't think I ever went under a 75 millimeter—a couple of times I even used a 400," says Allardice.

Long, telephoto lenses compress an image's foreground and background. It's hard to describe, but long lenses make all the shots feel as if you, the viewer, are right there in the middle of the action. Check out any Tony Scott or Michael Bay film, and you'll know exactly what I'm talking about.

On the character animation level, *Vortex* is breaking new ground for LightWave. Everything in this film is computer-generated. If you've ever attempted to animate a character realistically in LightWave, you know it's a challenge. Even using state-of-the-art motion capture equipment, the people at Foundation know it's a challenge as well.

One of the most difficult aspects of CGI characters is the fact that they actually have to act. These virtual actors need to give convincing performances on screen. To do this, the characters need realistic muscle tone, con-

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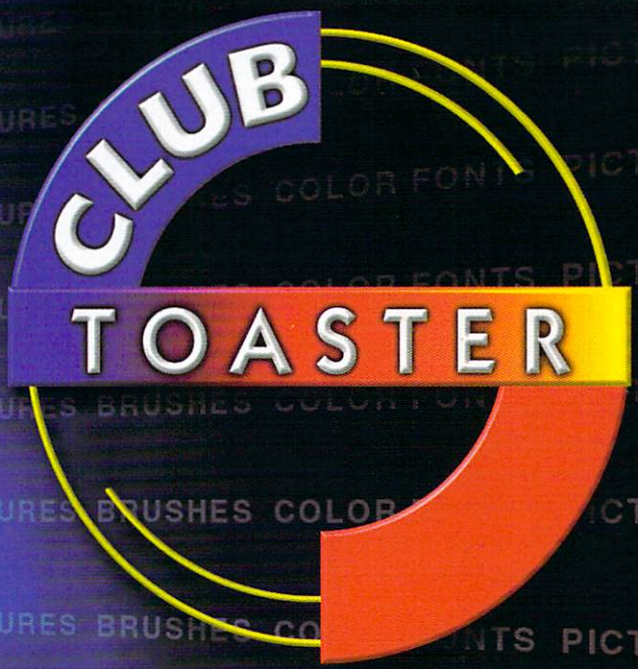

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HERE IS WHAT PEOPLE ARE SAYING

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Circle #210

A S.W.A.T. scene from Vortex.

vincing facial expressions, and hair. For this task, there is no magic bullet. There is no plug-in called "real.p." In many cases, it's just a lot of bones, polygons, and simple hard work.

A tool that is helping Foundation build more convincing CGI characters is its motion capture stage. Granted, Mo-Cap isn't a new technique, but it's literally being refined every day and utilized more consistently to blur the line between the workstation and reality, allowing CGI characters to move more like people and less like robots.

With all the challenges associated with animating characters for a full-length feature, especially a feature of the action/adventure genre, the question has to be asked—why not shoot actors over blue screen and composite them into CGI backgrounds?

According to Allardice, there are a lot of benefits to creating and building animated characters. "With the way I direct, compositing real actors would be very difficult. CGI characters are much easier to maneuver."

Another positive aspect of CGI characters is the ability to graft in certain body features and facial expressions from real actors. One of *Vortex*'s characters looks like a stunning combination between Paul Newman and Ed Harris—another is inspired by Cameron Diaz. Yet, these characters don't demand their own trailers, bottled French water, or exorbitant salary. They just act.

On a special effects level, *Vortex* will set the LightWave standard for explosions, smoke, blood, and particle-based effects.

One scene shows a shotgun-toting soldier battling a multi-leg alien affectionately known as a "six-pack." The alien takes a swing, the soldier ducks, narrowly escaping premature head removal, whips his weapon around and gives the alien permanent heartburn. As the bullet tears through the dying alien's body, it blows out his back—you know, the blood and chunks shot.

"When we received the first beta version of HyperVoxels, I was so excited," says Allardice, "because now we can do realistic exit wounds."

Another sequence utilizes Steamer to generate particle-based smoke coming from a missile launched from a submarine.

Now, in terms of actual execution, neither of these shots is out of reach for anyone who owns LightWave. Both Steamer and HyperVoxels are included with LightWave 5.6, but both are extremely render-intensive.

If *Vortex* is going to succeed as a full-length feature, it will be in large part due to NewTek's involvement as a software developer. During my interview with John Allardice, I was fortunate enough to be in the right place at the right time. Stuart Ferguson and Allen Hastings showed up to see the trailer and hear what Foundation needed from NewTek. (If you don't happen to know who they are, go into both Layout and Modeler. Click on "File" and pull down to "About LightWave").

Now, I can't tell you the details of the conversation, nor can I talk about what Ferguson and Hastings have planned for 6.0, but I will say this—if NewTek is able to answer even half of Foundation's needs for *Vortex*, it will radically affect what ends up on your desktop, in terms of functionality, speed, ease of use, and overall image quality.

On almost every level, *Vortex* is an impressive idea. If the feature can maintain the same style, intensity, and quality effects as the trailer, they'll have my money when it hits the theater.

It is the future of what we do.

Greg Nelson is a principle in the LemonAid Visual Effects Co. and a former senior animator for Disney d/fx. He can be reached at kidneyboy@msn.com. Read more about **Vortex** *in the upcoming December/January issue of NewTekniques!*

Tips of the Trade

You can take this one for what it's worth, but it has helped me a lot in the past. Visualize your LightWave 3D camera, not as something that can be manipulated by your mouse, but as a bulky, awkward Panavision Gold 35mm camera with a 1000-foot film load attached to the top.

If you think of your camera as a tool with significant weight and built-in imperfections, you will start to move it like a real camera, one that is always fighting to keep up with the action.

If you can replicate in LightWave this constant battle between gravity and the action in front of the camera, it will make your shots look significantly better.

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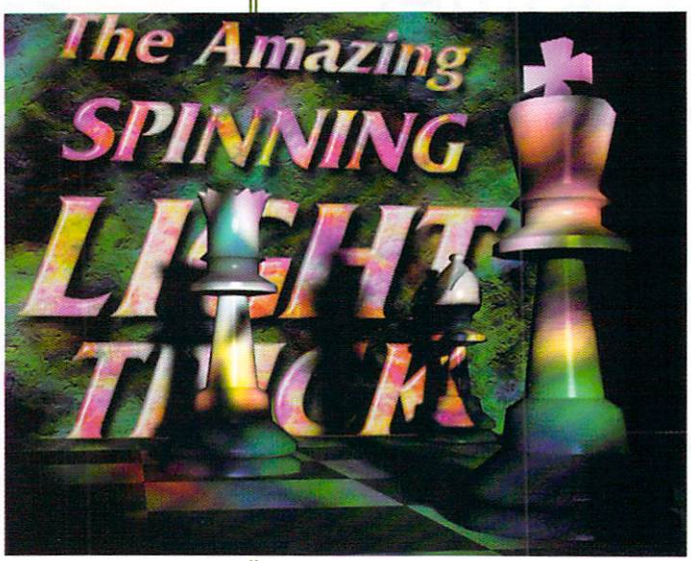
Area Lighting: A New Spin

Creating realistic shadows and lighting is important to your LightWave scene.

BY DAVE JERRARD

One of the biggest advancements in realistic 3D rendering is undoubtedly the ability to render realistic shadows, with edges that blur more as the distance from the objects casting them increases. Called area lights, these new lights can simulate the lighting model of a fluorescent tube or a flat panel, giving size to the light source, which had always been a single point before.



Since the release of version 5.5 of LightWave 3D last year, these new lights have opened up many new possibilities for artists, and 3D imagery has never looked better. However, there's a price to be paid for that realism. These new lights are not fast. Nor are they exactly directional, which can be a real problem. What happens when your favorite "client from hell" wants a character to be in a spotlight, and insists that the shadows look real? Or, even worse, what if you don't have area lights available to you yet, or you just can't afford the render times involved? Here's a solution that will set your mind spinning, among other things.

There's a little secret buried in LightWave that few people know about. Any light can be turned into an area light if you treat it right. That's correct: distant, point, and spot lights can all be made to cast those beautiful soft-edged shadows.

One method is through the use of light arrays, where you make multiple copies of a light and place these in an evenly distributed pattern. The entire array is parented to a null for easy placement (*Figure 1*). Each light would then cast a shadow slightly offset from its neighboring light, and these shadows, given that enough lights were used, would appear as one soft-edged shadow, with the edge appearing sharper near the object and softening over distance.

There are a couple of problems with this method however. The first is that setting the intensity of these lights can be a real nightmare, especially if you have a lot of lights in the array, as each light in the array will have to be adjusted. The other problem is render times. The more shadow-casting lights there are in a scene, the longer the scene will take to render.

If we could generate multiple shadows from a single light, we'd solve both problems, but how? LightWave has already shown us that answer in the way it calculates Depth of Field by jittering the

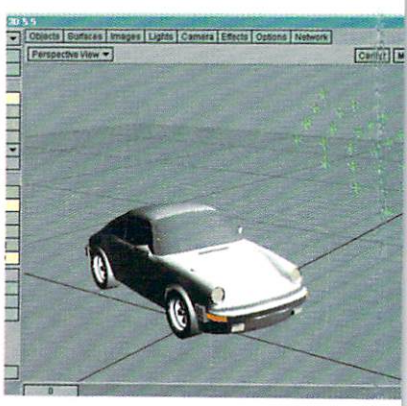


Figure 1.
A simple light array.

camera slightly during each antialiasing pass. Now, how do we make a light jitter around like that?

1. Load up LightWave and load the toys.lws scene from the LightWave CD. Create two null objects, and name one Handle, and the other, Spinner. Parent the Spinner null to the Handle null. Switch to the Light Edit mode, and reset the light's position and rotation to 0, then parent it to the Spinner null.

2. We have just built the basic setup needed for our little lighting trick, so let's set it in motion. Open the Motion Graph for the Spinner null and create a keyframe at frame 1. Select the Bank channel, and enter a value of 720 degrees here. Set the end behavior to repeat and close the panel.

We didn't use a value of 360 degrees for an important reason. The Blur Length setting indicates how far back in time LightWave will calculate motion. At 100% LightWave will calculate the motions of objects all the way back to their positions in the previous frame. If we had our light rotate 360 degrees per frame, LightWave would render the entire span of that rotation with motion blur. A blur length of 50%, however, would only cover half of that rotation, so to get a full circle, we need to double the amount of spin. Field Rendering requires that we double this yet again. When Field Rendering is applied, the Blur Length is effectively cut in half—now being applied to each field. Thus, we'll need a bank value of 1440 degrees for the Spinner null if we render with 50% blur and Field Rendering.

3. In the Lights Panel, change the light type to Distant. Close the panel again, and select the light in the view mode. Now, switch back to Object Edit mode and select the Handle null. We'll use this to aim our light. For now, let's get the shadows to fall in the foreground, so set the Handle null's rotation to H: -150 and P: 50.

4. Since we're using a distant light, only the angle is important, not the position. What we have just set up will now spin this light on its axis every frame, but the light will still be facing the same direction, which will do nothing special. What we need to do is angle the light slightly so it's no longer parallel with the rotation axis of the Spinner null. We'll do this by changing the light's heading to 1 degree. Now, we're ready to render.

5. Open the Camera Panel, and select Low Antialiasing, and turn on Motion Blur. (Dithered Blur will improve results.) Leave the Blur Length set to 50% and turn off the Soft Filter. Make sure Trace Shadows is activated, then hit F10 to render frame 1.

Figure 2. Area shadows cast from a distant light. Not too bad, but notice the breakup of the shadows at low antialiasing levels.

Figure 3. The same scene, this time with a point as the light source. Again, there's visible breakup of shadows at low AA levels.

Rendering frame 0 will not calculate the effects of motion blur. By hitting F10, we tell LightWave to start rendering frame 1, unless we specifically enter an alternative starting frame. Knowing this can make life easier by letting you stay on frame zero for initial setup without having to advance to frame 1 before hitting F9.

While this renders, you'll notice that the shadows adjust slightly during each render pass, then get averaged together at the end of the frame, giving a soft looking edge to the shadows. We just used Motion Blur to calculate the shadows of a light from five (ten if you used Dithered Blur) different angles and blended them together. At this low level of antialiasing, you'll be able to discern the individual shadows, particularly from objects that are distant from them (*Figure 2*).

Raising the antialiasing level to medium or high can reduce this. The rate that the shadows spread out is adjusted by the angle of the light to its axis of rotation—in this case, the Spinner null. Larger angles will emphasize the soft edge, giving the illusion of being lit by a larger (or nearer) light source. In any case, it's inadvisable to use an angle greater than 5 degrees since the individual shadows will start to separate, spoiling the effect. The shadows will not

be affected by the light's position so you can place it anywhere. It's only the angle that matters here.

Since we used a distant light here, every object in the scene will cast these soft shadows—with the soft edge, or penumbra, of every shadow expanding with the same angle. This makes this technique ideal for outdoor scenes. Now, how about indoor ones?

6. Open the Lights Panel and change the light type to Point. Now, before doing another render, we have to adjust this light's position slightly. First, move the Handle up and behind the objects. Try setting the null to X: 1.0 m, Y: 3.0 m, Z: 2.0 m. Now, move the light itself to -10 cm on the X-axis. This will put it off center of the Spinner, which will now cause it to circle the null in a 10 cm radius orbit. Don't worry about its heading since that has no effect with this light type. Again, hit F10 to render (*Figure 3*).

By spinning this light in a tight orbit, we've simulated giving it a size—in this case, a 20 centimeter diameter. However, since this is a flat orbit, the area effect is most apparent from the front and back of this light. Shadows cast edge-on from this orbit will look more like they were cast from a linear source. We'll keep this in mind for later. Let's move on to the next light type and really start to have fun.

7. Again, open the Lights Panel and change the light type to Spotlight. Change the Cone Angle to 12 degrees and the Soft Edge Angle to 0. Leave the Shadow Type set to Raytrace. For this light, both position and orientation are important, so it should be handled a little differently. We'll target this light to an object in the scene for more control. We'll use the Floor.lwo as that target for now. Hit F10 once again for another test render of frame 1 (*Figure 4*).

You'll notice that the shadows are virtually identical to the ones our spinning point light created. This time, however, they're confined to the spotlight's cone angle. Also, notice that our spotlight doesn't have the razor sharp edge we'd expect from a Soft Edge Angle of 0. Sure it's a little rough here, but by increasing the Soft Edge Angle slightly, we can improve it considerably. Let's continue with the next test first.

8. Open the Lights Panel again, and this time, set the Shadow Type to Shadow Map. Set the Shadow Map size to 512 and the Shadow Fuzziness to 1.0 and do another test render by typing F10 (*Figure 5*).

The first thing you'll notice is that this image rendered much faster than the previous ones, revealing an obvious benefit—speed. If we look more closely at this technique, we'll find there are a couple of hidden bonuses to using a spotlight like this. The first is that by spinning a shadow-mapped spotlight, the resulting shadows will actually be more accurate, allowing you to use smaller shadow maps than you normally could. For example, set the Shadow Map size to 200 and render a frame with Antialiasing turned off. In a few seconds, you'll have a pretty sick-looking shadow (*Figure 6a*). Compare that with the same shadow settings with the motion blur applied (*Figure 6b*). Experiment with the Shadow Map Size and Edge Fuzziness settings to see how these affect the shadows.

Polylines and particles are not able to cast shadows, except through shadow maps. With this method, they can also cast area shadows, opening the door to some interesting effects.

Another added bonus is that now your spotlight beams can have a focal point applied to them—very similar to how a projector focuses at a certain distance. By using a null as a target for the spotlight, we have a means not only to aim the light, but also to set its focal point, which will be centered on the null. In fact, let's create that projector effect.

9. Clear the scene and load up the flatbox.lwo object from the Objects/MappingPlates directory. Make two clones of this object and position them similar to that in *Figure 7*—no need to be precise here, we just want to be able to project our spotlight onto three separate panels at varying distances at the same time.

10. Create the null arrangement that we set up in Step 1, by creating two nulls, and parenting one to the other. Once again, open the Motion Graph for the Spinner null and create a keyframe at frame 1. Set the bank to 720 degrees at this frame and set

Figure 4. Soft edged, ray traced shadows from a spotlight!

Figure 5 Soft shadow-mapped shadows that behave like area lights.

Figure 6a A shadow map size of 200 generates a v pixelated shadow.

Figure 6b The same shadow, after being smoothed motion blur, looks much better.

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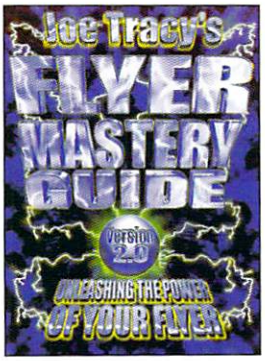

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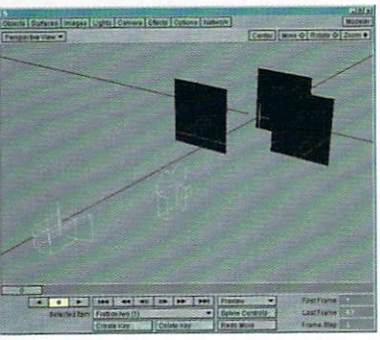

Figure 7. Our projector screen setup.

the End Behavior to Repeat. Close the panel and move the Handle null back about 20 meters on the Z-axis.

11. Create one more null, and call it Focus. Leave it as the origin for now and target the light to it.

12. Open the Light Panel and set the light type to Spotlight and Shadow Type to Shadow Map. Parent the light to the Spinner null and position it at 50 cm on the X-axis. Switch the view mode to Light and adjust the Cone Angle until you have portions of all three flatbox.lwo objects filling the view. We want to make sure our light will shine on each one for this experiment.

13. Position the camera so you can get a good view of the movie on all three panels. Open the Camera Panel and activate both Low Antialiasing and Dithered Motion Blur. Leave the Blur Length set at 50%. Use the settings below if you want to get the exact results shown here.

Flatbox 1	Flatbox 2	Flatbox 3
X: 3.0 m	X: 0.0 m	X: -3.0 m
Y: 0.0 m	Y: 0.0 m	Y: 0.0 m
Z: 0.0 m	Z: 3.0 m	Z: -2.0 m

Camera:	Focus Null:
H: -3.4	X: 0.0 m
P: -14.2	Y: 0.0 m
B: 0.0	Z: 0.0 m

Spotlight: Cone Angle: 7.0°

Do a test render to make sure you have light falling on all three panels. If not, adjust the position of the flatbox objects or Handle null, until you do.

14. For our movie, we'll show my all time favorite, *The Monster That Mooed Manhattan* (obviously, a Roger Corman flick), by loading up the famous GiantCow.iff image. In the Lights Panel, select this image as the projected image for the spotlight. While we're here, let's darken the theater by reducing the ambient light to 5% or less.

15. Before we can show our flick, we have one major detail to fix. Since our light will be spinning around, our projected image will also be rotating. We'll have to counter the rotation of the Spinner null by banking our light in the opposite direction. Open the Motion Graph for the light and create a keyframe at frame 1. Select the bank channel and enter a value of -720 here. This will cause the light to spin at the same rate, but in the reverse direction of the Spinner null, effectively canceling it out.

16. Position the Focus null to the same Z value as the middle panel, being sure to keep the X and Y values unchanged from 0. Hit F10 and sit back.

In a few minutes, you'll have an image projected onto three panels, but out of focus on two of them. The middle panel, however, will be sharp, since that is the distance we set for our Focus null. Try positioning the null near the other panels and rendering again. You'll find the same principles apply here as with Depth of Field for the camera. The farther you get from the lens, or in this case, the light, the greater the depth of field will be. The closer you get, the lesser the distance that will be in focus.

Well, we've covered what is now known as the Spinning Light Trick, but there's another trick we touched on earlier. Let's go back to that point light source again. Remember how it casts full area shadows, but only from the front and back? From the edge, the light would seem to be a straight line, like a Linear light!

Well, there's a way we can simulate that type of light. That is to simply stretch the Handle null, which will apply the same stretch factors to the path of the light, turning into an elliptical orbit. In this way, we can conform the orbit of the light to fit virtually any rectangular area, or linear area. However, this will only work with a point or spotlight. Distant lights will not be affected by this path stretching.

In all our lighting tests, we've been using a low-level antialiasing to provide blur to our shadows. However, they've also suffered a little due to the fact that we could still make out the individual shadows that were generated. By using a dithered blur, we can double the number of shadows to further smooth out the look. Increasing the antialiasing to medium or even high will greatly improve the quality of these shadows, but at a corresponding cost in render time.

Another way to increase the quality is to add a second, or even a third light to the null assemblies, each with a slightly different radius. If the main light is placed at 10 cm, we could place a second light at -5 cm to act as a sort of counter balance. With two lights at low AA levels, we'll now generate 10 shadows, or 20 with dithered blur. We just need to be aware that we will now have to divide the intensity of the lights by the number we use in the spinning assembly since they will add up, quickly washing out the scene. We will also have to adjust the intensity of every light in the assembly to get the lighting just right. Luckily, for test renders, we don't have to wait for all those antialiasing passes. We can simply turn AA off for our test renders and still see exactly how bright our scene will be lit. Then, when we're satisfied, we just turn it back on, activate motion blur and let it render.

So we've been blurring shadows all day now, but what's the point if we have Area Lights in LightWave? In one word, *speed*. LightWave's Area Lights take a

long time to render. In fact, a single pass render with an area light can take nearly twice as long as a five pass render with a spinning light. Let's take a look at a few comparisons.

Using the toys scene we have set up, we'll try each light type and compare the results. My results are shown in the chart below, though your values will undoubtedly vary. The shadow map size I used was 512, with a 1.0 fuzziness value.

Light Type: No Antialiasing:

Low Enhanced	Medium Enhanced	Distant
29 seconds	238 seconds	432 seconds
Point:		
34 seconds	285 seconds	501 seconds
Spot (Raytraced):		
32 seconds	258 seconds	511 seconds
Spot (Shadow Map):		
18 seconds	151 seconds	292 seconds
Linear:		
178 seconds	853 seconds	1602 seconds
Area:		
342 seconds	1705 seconds	3078 seconds (51 minutes)

As you can see, the Area Light takes about eight to ten times longer than a normal light without any antialiasing. Even if you were to apply adaptive sampling to a frame involving an area light, it will take about as long to render as a normally illuminated scene with Enhanced Medium antialiasing. Meanwhile, our shadow-mapped spotlight comes in at about half the time of its closest competitor, and it's one of the most versatile lights we have in our arsenal. Now, you're probably asking yourself, "Why even bother with these Area Lights if they're so slow?"

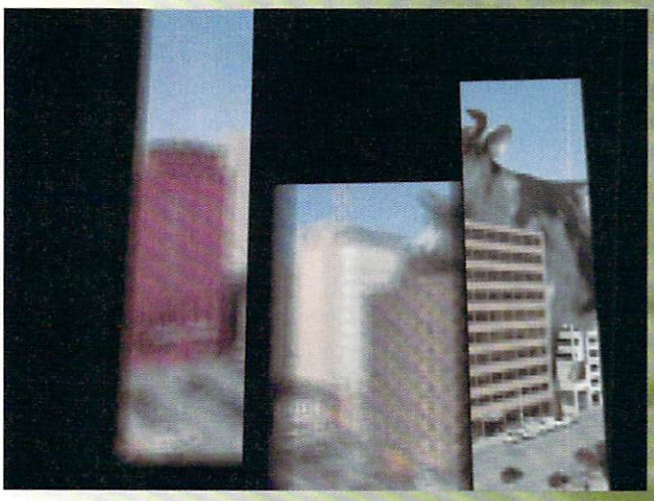

Figure 8. Our movie projected on three screens, but only in focus on one.

Let's not dismiss these new lights entirely. They do have attributes the others don't. For instance, their lighting model more closely duplicates that of the real world. Let's compare the Area light with a spinning point light and a spotlight. The first thing you'll notice is that the area light has a significant falloff, even though we never specified one. At the same intensity value, the area light creates a stronger hotspot on nearby objects, and generally gives a

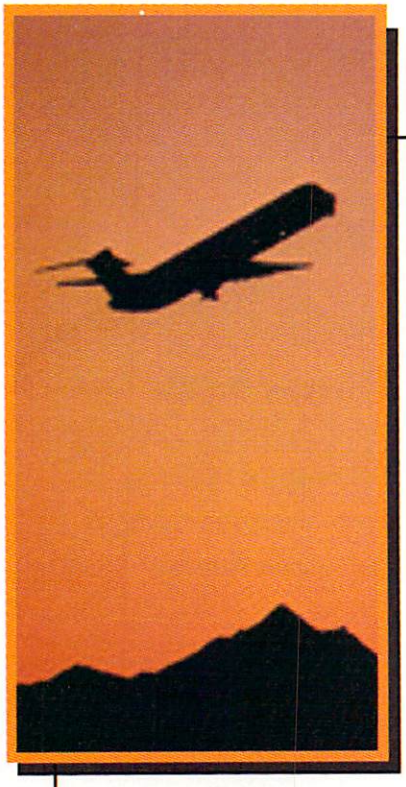

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Figure 9a. A medium antialiased image with a point light source. Notice the even background lighting.

Figure 9b. A low AA level render with an area light sized to match the spin diameter of the point light.

Figure 9c. A medium enhanced AA render of a shadow mapped spotlight.

much more dramatic feel overall. Our point light, while faster at rendering, tends to look a little flat. Applying a falloff value to it will improve the appearance, but we'll also have to increase the intensity to try to match the Area Light.

Our shadow-mapped spotlight also feels a bit flat compared to the area light. But, even at medium enhanced AA, it renders faster than an area light's single pass. Again, a falloff value and a higher intensity can adjust it to match the area light.

The greatest benefit, aside from speed, is the fact that the area effect is constrained to the spotlight's cone angle. We could simulate this spot effect with an area light by placing it inside an open ended tube, but that would impact the render time even more since so much of the scene would now be in the shadow of that tube.

So, what have we learned from this? For one, we now have a way to improve our scenes with soft area shadows and still squeeze out precious minutes per frame. More importantly, we've added a useful lighting technique to our toolbox, nearly doubling the number of light models to choose from. I don't know about you, but I feel like making shadow puppets now.

Dave Jerrard is the lead tutorial writer for NewTekniques magazine. In the next issue, you'll find out about a secret project he's been working on. Visit his Web site at www.gsidigital.com/dj

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Creating cool signature effects with NewTek's new Aura program.

BY DAVE JERRARD

Aura Signature Techniques

Nearly every animator has faced the challenge at one time or another, to have a signature write itself on the screen, as though written by an invisible person. Typically, the signature is scanned, followed by a painfully tedious process of duplicating the signature over a series of frames and removing a little bit at a time, frame by frame, until the final result is acceptable. I've done this myself a few times, and the process can take up to a day, depending on the length of the animation and the level of detail required. Deluxe Paint on the Amiga simplified this task considerably with its animation tools, but the brunt of the work still consisted of manual labor. The people behind NewTek's Aura seem to have realized this and they've included some serious power for animators faced with this challenge. We're going to explore some of that power here.

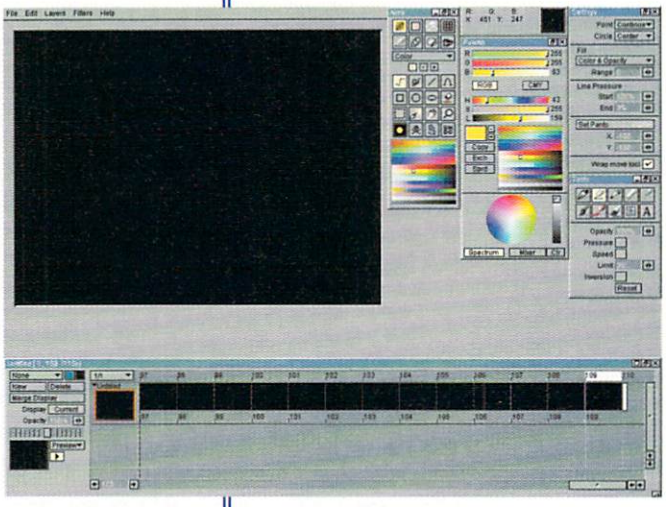

Figure 1. The main Aura screen. Everything we will be doing will be in this screen.

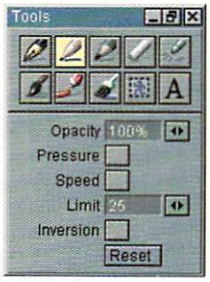

Figure 2. The Propelling Pencil tool settings.

1. Start up Aura. Immediately, you will be presented with a panel asking for a page size and a configuration file. At the top of this panel you will see an image being drawn, much like what we have in mind, so this must be the program to do it in! Select the configuration you prefer, and select the VGA Hires page size from the popup panel. Click the OK button and we're in.

2. The first thing we need to do is decide what to write. I could use my famous email signature, but that could take days, so let's stick with just a name. Everyone's signature will be different, so don't be surprised if yours doesn't quite look like the one in the figures here. Do be surprised, however, if it does match! Next we need a color. Aura has a wide variety of color selection options, so pick whichever one you're most comfortable with.

3. We'll start our masterpiece as many traditional artists would—by sketching it out. If the Tools panel isn't open yet, click the first button of the second row on the Main Panel to access it. This button will either look like a drawing tool, such as a pencil or brush, like a capital letter T, or like a blue running man trapped inside a dotted box, depending on which tool was previously selected. The Tools panel contains ten buttons at the top, each representing a different drawing tool. Since we're going to

sketch, we should use a pencil (we don't have to, but it is traditional), so select the Propelling Pencil Tool, which is the second button on the top row. (*Figure 2*). The bottom sections of the panel will change to show the settings that are available for this tool. Since we're sketching, we don't need anything fancy, so turn off the Pressure and Speed options for now.

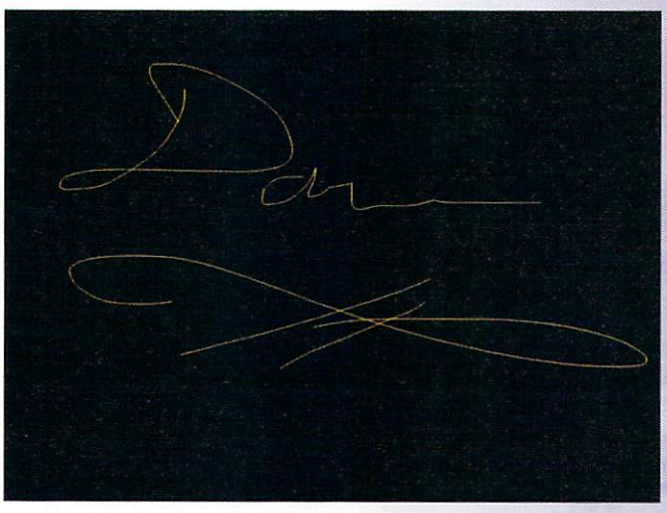

Figure 3. A sample signature. Ok, so maybe I should have been a doctor.

4. If you're using a tablet, then you're ahead of the game. For mouse users out there (like myself), it's a good idea to get a few practice strokes in first. Make sure the Drawing Mode, located on the Main Panel, is set to Color and select the Freehand Line method by typing 'd.' Now run off a few signatures to get a feel for it. Click the little skull and crossbones icon to clear the page when it gets too crowded.

5. Once you have a feel for the program, you can set up our animated signature. To do this, click on the Filters menu and select the Animated>Stroke Recorder option. A small panel will open with all the necessary tools. Move it somewhere out of the way, and then click the Record button. From this point on, every stroke you make in the page area will be recorded by this panel for playback later. Draw a quick doodle on the page, then clear it by clicking the skull icon. Click the Record button again to stop the recording process. You'll notice the button is now labeled Append. This will let us add to the existing recorded stroke later on.

6. Click the Apply button at the bottom of the Stroke Recorder. You will see the strokes you just performed automatically redraw on the page. Clear the page once more, and select a different color. Click the Apply button again.

   The Stroke Recorder *only* records the stroke movements. It does not record the color or the tool settings. This allows you to play back a stroke later on using whatever tool and drawing mode you want. Interesting effects can be achieved quite easily by repeating the stroke with a variety of drawing modes, as we'll see a bit later.

7. Now that we have the hang of the recorder, let's save the brush stroke. Click the Save button and a requester will pop up asking for a file name. Just type in something like Signature.ask and click OK. (Save on the Windows requester).

We now have a nice signature, but how do we animate it to look like it's being written in real time? A typical signature takes about three or four seconds to write, so let's create an animation of that length. Clear the page by clicking the skull again, and then click the Layers Control button at the top of the Main Panel. It's the one that looks like three overlapping squares beside the Drawing Tools button. Across the bottom of the screen, a long window will appear with a variety of controls clustered in the left side and a long timeline window on the right.

8. Currently, we have a single frame in the layer called "Untitled" as the title bar states. Beside that name we see the numbers [0, 0 (1)], which refer to the start and end frames of this layer, and the total length in parentheses. What we're interested in here is the timeline itself. Since we started with a blank page, we'll just have a black rectangle here, but

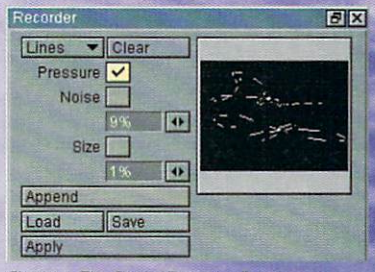

Figure 4. The Stroke Recorder Panel

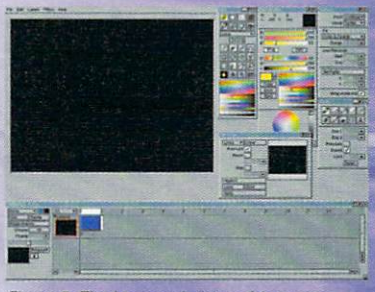

Figure 5. The Layers window, where we can create, stretch, merge and edit animations to our will.

Figure 6. The Timeline with a 100-frame animation ready to go.

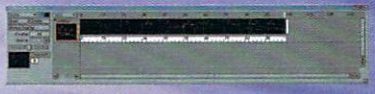

Figure 7. The Timeline with a simple 100-frame signature!

Figure 8. The Airbrush panel, showing the Falloff Curve we will be using.

Figure 9. Cool neon effect! Note the slight haze across the bottom of the frame. This is the result of drawing a timing stroke too close to the edge of the image area.

Figure 10. The neon writing with a leading flare.

with a red outline. This indicates that this is the active layer. Beside the black rectangle will be a blue box with a white stripe on its side. This indicates we have a simple image layer, with the blue box indicating the duration the layer will be visible in an animation. Above this we have a drop down button currently labeled "1/1". Click this and select the 1/10 entry. This will compact our timeline by ten times. You should now be able to see at least 100 frames in the timeline across the top of this window. The blue box will appear as a thin vertical line now. Click on the white bar beside it and drag it out to the left, stopping under frame 100. This will stretch our blue box out to frame 99. Since the first frame is frame 0, we now have a layer that spans 100 frames. The numbers in the title bar will confirm this since they will change to [0, 99 (100)].

9. We don't have an animation quite yet. What we have so far is an image layer. We need to convert it to an Anim. Simply right click the mouse anywhere over the active layer and a popup menu will appear. Select the Make Anim option in the middle of this menu and the blue box will change to a black strip with what appears to be ten frames. Each one of these frames represents ten animation frames since we're currently working in the 1/10 time scale. Now we're ready to animate.

10. For starters, we'll use the signature we just created. We'll make it span the entire 100 frames we have ready. Right click the layer somewhere and click the Select All menu option near the bottom of the popup. You will see the frame numbers, immediately below the 'film strip,' are now highlighted in white. These are the frames we will be applying the signature to. You can also click and drag across these numbers to manually select a specific range of frames, which we'll get to later. Now the fun part begins.

11. With these frames highlighted, click the Apply button on the Stroke Recorder Panel and sit back. A progress indicator will appear, and you will see the signature being drawn repeatedly in the main page area. Each time it redraws it will add a little more of the stroke until all the frames have been finished. Almost too easy! To get an idea of how the animation looks so far, click the small Play button (the one with the triangle) next to the small preview window in the bottom left corner of the panel. This will play back a thumbnail of the animation good enough to get the timing right.

12. If you want a higher quality preview, click the Preview drop down button beside the thumbnail and select the Make option. A progress indicator will appear as Aura creates a larger animation. In a few moments a larger preview will be displayed in the center of the screen.

Undo will affect the entire sequence of frames, so if you don't like the color, or the brush, you can click Undo, set up a different brush or color, then apply the stroke again.

We could now save this animation as a sequence of frames, or an AVI, but let's spice it up a bit. First of all, the signature writes itself out just a little too evenly with no time between separate brush strokes. In fact, there is no way to tell it to wait a few frames before beginning a new stroke...or is there?

13. Clear the sequence by clicking the Skull button and then click the small white block on the top scale of the timeline. This will deselect the frames and set the current frame to frame 99. Next, click the Clear button on the Stroke Recorder. Make sure the Pressure button is checked on this panel as well, since this will improve the look of the next few steps.

14. Select the Pen tool from the Tools Panel and make sure its options are visible. Click the maximize gadget on the title bar. Change the value for Size 1 to 5 pixels and the value for Size 2 to 2 pixels. Check both the Pressure and the Speed options so that they're both active. Finally, specify a Speed Limit of 8. This will give our strokes a nice smooth flourish as we write, which is what we'll do next. First, click the Record button on the Stroke Recorder to get it running.

The Speed Limit setting used here works well for writing with a mouse, giving a nice thin line with faster movements. It may not, however, work so well with tablets. Other drawing tools may work better with a higher setting, so it's a good idea to experiment. Whatever the Speed limit is set to when the stroke is recorded will be the value that will be applied when the stroke is played back.

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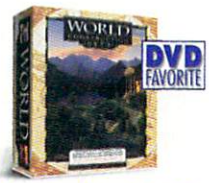

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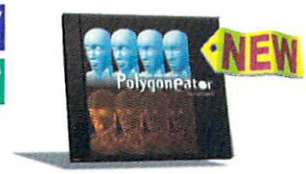

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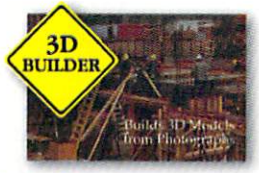

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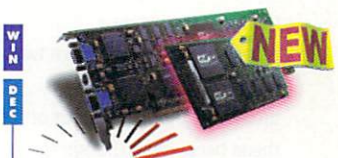

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15. Write your name again, but this time only do the first letter. If you don't like the way it looks, click Undo. This will undo the last stroke from the page as well as remove it from the stroke recorder. When you have a stroke you like, draw another one somewhere in the blank gray area outside the image area of the page. This doesn't need to be a fancy stroke, just a stray line anywhere in the gray area will do. You won't see anything, but the stroke recorder will!

Aura will let you draw outside the image area, which is apparent if you've ever dragged a brush near the edge and watched it continue to work even though the pointer was off the image. We're using this technique to add a bit of time to the end of the stroke we created in the image area. We now have two strokes in the Recorder's memory. It will play both of these back, even though the second one is outside the image area. This way, we can space out multiple strokes as though we were lifting our hand to reposition it for the next part of the signature.

16. Continue with the signature, using Undo to correct any stroke you're not happy with. Remember, Undo will only affect the last stroke made, so make sure you don't bounce the mouse button. When you complete a stroke you like, add another stray line in the gray area outside of the image area. Add one of these stray lines any time you would pick the pen up from the writing surface. This will add a few frames of inactivity to the animation.

17. When the signature is done, click the Record button to stop recording. Click the Save button and save this series of strokes so you have it around for later.

18. In the Layers Panel, right click the active layer and Select All again. Click the Apply button in the Stroke Recorder and wait while it writes this new signature out to the animation. When it's done, play it back and you will see that it now writes out a little more naturally. This sequence is ready for whatever devious purpose we have in mind, so it's ready to be saved.

19. We now have a nice little write-off, but after a while it'll get a bit boring. Let's add some flair. We'll start by clearing the sequence. Select all frames and click the skull. Next, select the last frame by clicking the white bar above it.

20. Select the Airbrush tool and make sure Auto Step is activated. Adjust the falloff curve so it's a linear falloff, as in *Figure 8*. Finally, Open the Color Palette if it's not already open and select a bright pure color that will look good for a neon look. Magenta usually does a good job at this so set the color to R: 255 G: 0 B: 255, then slide the Lightness slider down to 100.

21. Now things will get a bit tedious, but the result will be worth the trouble. First, we'll do a single frame test run, just to see what the final result will be like. On the Airbrush Settings, set the Size to 100, Power to 100% and the Opacity to 10%. Click Apply on the Stroke Recorder, and in a few seconds a very dark purple color will start to appear. When that's done, go back to the Airbrush settings and lower the Size to 80. Raise the Opacity to 20% and switch back to the Color Palette. Raise the Lightness slider to 120 and click the Apply button on the Recorder. The purple will become a bit more intense and will have a wider falloff along the edge. Repeat the process a few more times, using the following values for a total of eight passes.

Pass	Size	Opacity	Lightness
1	100	10	100
2	80	20	120
3	60	30	140
4	40	40	160
5	20	50	180
6	10	60	200
7	7	70	220
8	5	80	240

What you end up with should resemble the image in *Figure 9*.

22. Once this is satisfactory and you like the color, clear the frame and select the entire sequence again. Reset the values, starting with pass #1 in the chart, and apply them again to the entire animation. This will take a few minutes to complete, but will speed up quite a bit about halfway through the list. The animation frames may look a little strange as they are being generated, but that's normal. They won't look bad when the animation is complete. To speed things up, Aura only updates the part of the screen it is changing, so the frames may look a bit messy at times as the program does its work.

23. Next, click the Preview drop down button and select the Make option. In a minute or so, you will have a large preview of the animation playing, where your name is written out in glowing neon light. Experiment with this using other colors and different falloff curves.

If the colors you choose produce a lot of color banding (mach bands), try this: Type F7 to change the Drawing Mode to Grain and raise the Airbrush Size to 100. Then apply the stroke again. This will add a slight dithering to the previous strokes and will reduce the apparent banding quite a bit. The grain will also change from frame to frame, giving the illusion of film grain.

24. The Stroke recorder has a couple of other nifty tools we can play with for good effects. One of these is the Size control. With this we can have our signature snake its way around the screen, erasing itself as it goes. Very low Size settings can look

like fireflies or other streaking points of light that whip around the screen. We can use this effect on top of our existing animation to add a leading flare to the signature as it writes itself.

Activate the Size button and lower the value to 2%. Select a bright color and change the Airbrush Size to 100 and the Opacity to 75%.

25. Select the Layers Panel and click the New button on the left side. This will create a new layer to work on, so that we don't ruin the animation we have now. There will be a thin blue line at frame 99, since that is the last frame we were working on. It will have a white bar on either side. Click the bar on the left and drag it back to the left side of the window so the blue strip starts at frame 0. Right click on this strip and select Make Anim. Now, everything that we place in this layer will be superimposed on the previous layer, but will not change it. Select all the frames in this layer by right-clicking on it and using the popup menu.

26. Switch over to the Stroke Recorder and activate the Pressure button. Click Apply and in a few moments, you will see a very short segment of the signature snaking its way around the neon path as though it were creating the path. To add to the effect, Size the Airbrush down to about 30 and raise the Opacity slightly. Increase the Lightness to almost white and apply the stroke again, but this time set the Recorder's Size to 1%. Now you will have an effect that looks like a bright spark, leaving behind it a neon trail. The spark will stretch and shrink a bit as it changes speed, looking like it's blurring. The effect is enhanced by the fact that the brush changes in intensity as it stretches.

27. Increase both the Airbrush Size and Opacity to 100. Since the brush is only being dabbed once per frame, it will appear less intense. Click Apply on the Recorder again and when it's finished, the glow will appear brightest at the leading edge and trail off quickly behind, leaving the original neon trail.

28. Another effect we can do is seen on TV all the time. Advertisers seem to love vibrating squiggly text, (*Figure 11*). We can apply this effect to our text as easily as pushing a button. On the Recorder Panel, there's a button labeled Noise. Click this Noise button and enter a value of 10%. Deactivate the Size button and select a single frame from the Layers Panel. Type 'j' to go to the swap page and apply the recorded stroke here. Apply it again and you will see it doesn't match the first application.

29. Let's put this effect into action now. We'll repeat steps 20 to 23, but this time we'll be using the Noise feature. When finished, you should have something similar to the image in *Figure 12*. In this case, I used yellows which resulted in an image that looks like a hot electric light filament.

These animated signatures are easily incorporated into other projects, like LightWave animations, by saving out the sequence as a series of frames or a flyer clip, and then mapping them onto a surface within the 3D scene itself.

3D animations and live video clips may also be loaded into Aura in order to have the write-off applied directly to the frames themselves. This would save a lot of re-render time if the text later needed to be replaced for some reason.

The Stroke Recorder is an extremely powerful tool and this tutorial just scratches the surface. Other tasks it can be used to accomplish include animating sparkling gleams across the edges of objects in a frame, animated screen fills and dissolves, and everyone's favorite—the growing route on a map—an effect which is probably most famous for its appearance in the Indiana Jones trilogy. I'll cover that another time.

Dave Jerrard is the lead tutorial writer for NewTekniques magazine. You can access his Web site at http://www.gsidigital.com/dj.

Figure 11. The Noise feature makes for great animated jittery text. Note the variations from frame to frame.

Figure 12. The same signature in yellow with a Noise value of 10% applied to give the illusion of a vibrating light filament.

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Three Recording Modes:
- High resolution full motion video (Normal Movie Mode)
- High resolution stop action images of moving subjects (Frame Movie Mode)
- Perfect stills (Digital Photo Mode).

Unique Design & Dual Action Carrying Handle
- In additon to the normal side grip,the handle includes an additional start/stop switch and zoom control for dual-action shooting.

Additional Features:
- 180,000-pixel color viewfinder
- Zebra pattern and color bar generator
- Automatic and manual white balance, gain (five preset levels from -3 to +12dB) and exposure lock.
- Composite, S-Video output, DV (IEEE 1394) in/out, Control L
- Digital fader and wide screen TV effect
- Headphone jack with level adjustment
- Remote control with jog/shuttle dial

QUICK DIAL 74

SONY

DSR-200A
3-CCD Digital (DVCAM) Camcorder

Combining a compact and lightweight body with the superior picture quality of DSP (Digital Signal Processing) and the DVCAM format, the DSR-200A is the ideal acquisition tool for video journalists, event and wedding videographers, stringers and production houses. 500 lines of horizontal resolution, 48kHz or 32kHz digital audio, three hour record time, and minimum illumination of 3 lux is only the beginning. Other features include 16:9/4:3 capability, Steady Shot, high resolution 1-inch viewfinder, time code operation, time/date superimposition and an IEEE-1394 interface for direct digital output. Offers full automatic as well as manual control of focus, iris, gain, white balance and shutter speed.

- Variable servo 10X optical power zoom lens goes from 5.9 to 59mm in 1.7 to 24 seconds. The manual zoom rocker is continuously variable right up to where the digital 20X zoom kicks in.
- Sony's Super Steady Shot reduces high frequency camera shake without compromising image quality. SteadyShot uses horizontal and vertical motion sensors that allow it to work accurately while zooming, moving (even shooting from a car), and shooting in low light conditions.
- Has digital effects including audio and video fade, overlap and Slow Shutter.
- Automatic and manual focus, iris, shutter, gain and white balance. Iris is adjustable in 12 levels from F1.6 to F11, shutter from 1/4 to 1/10,000 of a second in 12 steps, Gain from -3dB to +18dB in 8 steps.
- Zebra Pattern indicator, built-in ND filter.
- Custom Preset function lets you preset, store and recall custom settings for color intensity, white balance (bluish or reddish), sharpness and brightness.
- Stores Photo, Date/Time, Shutter Speed, Iris, Gain and F-stop for easy recall. So if you have to re-shoot, you know your original settings for every scene and frame.
- Records Drop/Non-Drop Frame time code. Time code can be read either as RC time code or as SMPTE time code
- Has a large 1-inch B&W viewfinder with 550 lines of resolution for easy focusing even in low contrast lighting situations. Separate information sub panel displays time code, battery time, tape remaining and other camcorder functions without cluttering up the viewfinder.
- Records 16-bit/48kHz audio on one stereo track or 12-bit/32kHz with two pairs of stereo tracks (L1/R 1, L2/R2), so you can add stereo music or narration.
- One-point stereo electret condenser mic for clear stereo separation. Directivity can be selected from 0°, 90° & 120°.
- Automatic & manual (20-step) audio level record controls. Monitor audio with headphones or from the LCD panel which has an active VU meter.
- XLR input connectors for mics and audio equipment.

DSR-200A Field Package:
- DSR-200A Camcorder • NPA-1000/B Battery Case Adapter
- 3 NP-F930/B 7.2v 4000 mAH Batteries
- AC-V900/B AC Adapter, Triple Battery Charger
- VCT-U14 Tripod Adapter • LC-2000CP System Case

DSR-30 DVCAM Digital VCR

The DSR-30 is an industrial grade DVCAM VCR that can be used for recording, playback and editing. DV standard 4:1:1 sampling digital component recording with a 5:1 compression ratio provides spectacular picture quality and multi-generation performance. It has a Control L interface for editing with other Control L based recorders such as the DSR-200A DVCAM Camcorder or another DSR-30 . It also has a continuous auto repeat playback function making it ideal for kiosks and other point of information displays. Other features include high quality digital audio, IEEE-1394 Digital interface and external timer recording. The DSR-30 can accept both Mini and Standard DVCAM cassettes for up to 184 minutes of recording time, and can playback consumer DV tapes as well.

- Records PCM digital audio at either 48kHz (16-bit 2 channel) or at 32kHz (12-bit 4 channel) .
- Equipped with Control L, the DSR-30 is capable of SMPTE Time Code based accurate editing even without an edit controller. Built in editing functions include assemble and separate video and audio insert .
- By searching for either an Index point or Photo Data recorded by the DSR-200A camcorder, the DSR-30 drastically cuts the time usually required for editing. The DSR-30 can record up to 135 Index points on the Cassette Memory thanks to its 16K bits capability.
- Audio lock ensures audio is fully synchronized with the video for absolute precision when doing an insert edit.
- Built-in control tray has a jog/shuttle dial, VCR and edit function buttons. The jog/shuttle dial allows picture search at ±1/5 to 15X normal speed and controls not only the DSR-30 but also a player hooked up through its LANC interface
- DV In/Out (IEEE 1394) for digital dubbing of video, audio and data ID with no loss in quality.
- Analog audio and video input/outputs make it fully compatible with non-digital equipment. Playback compatibility with consumer DV tapes allows you to work with footage recorded on consumer-grade equipment. Tapes recorded in the DSR-30 are also compatible with Sony's high-end DVCAM VCR's.

PVM-14N1U/14N2U & 20N1U/20N2U
13-inch and 19-inch Presentation Monitors

With high quality performance and flexibility, Sony's presentation monitors are ideal for any environment. They use Sony's legendary Trinitron CRT and Beam Current Feedback Circuit for high resolution of 500 lines as well as stable color reproduction. They also accept worldwide video signals, have a built-in speaker and are rack mountable. The PVM-14N1U/20N1U are designed for simple picture viewing, the PVM-14N2U and 20N2U add RGB input and switchable aspect ratio.

They Feature:
- 500 lines of horizontal resolution
- They handle NTSC, NTSC 4.43, PAL, and SECAM.
- Picture (chrome, phase, contrast, brightness) and setup adjustments (volume, aspect ratio) are displayed as easy-to-read on screen menus.
- Closed captioning is available with the optional BKM-104 Caption Vision Board.

PVM-14N2U/20N2U Only:
- (Last Input Switch) - Contact closure remote control allows you to wire a remote to an existing system so that the monitor's input can be remotely controlled to switch between the last previously selected input and the current input.
- 4:3/ 16:9 switchable aspect ratio

PVM-14M2U/14M4U & 20M2U/20M4U
13-inch and 19-inch Production Monitors

Sony's best production monitors ever, the PVM-M Series provide stunning picture quality, ease of use and a range of optional functions. They are identical except that the "M4" models incorporate Sony's state-of-the-art **HR Trinitron** CRT display technology and have SMPTE C phosphours instead of P22.

- HR Trinitron CRT enables the PVM-14M4U and 20M4U to display an incredible 800 lines of horizontal resolution. The PVM-14M2U and 20M2U offer 600 lines of resolution. M4 models also use SMPTE C phosphours for the most critical evaluation of any color subject.
- Dark tint for a higher contrast ratio (black to white) and crisper, sharper looking edges.
- Each has two composite, S-Video and component input (R-Y/B-Y, analog RGB).For more accurate color reproduction, the component level can be adjusted according to the input system. Optional BKM-101C (video) and BKM-102 (audio) for SMPTE 259M serial digital input.
- Beam Current Feadback Circuit
- 4:3/16:9 switchable aspect ratio.
- True multi-system monitors they handle four color system signals: NTSC, NTSC 4.43, PAL, and SECAM.
- External sync input and outputcan be set so that it will automatically switch according to the input selected.
- Switchable color temp: 6500K (broadcast), 9300K (pleasing picture), User preset.(3200K to 10000K).
- Blue gun, underscan and H/V delay capability
- On-screen menus for monitor adjustment/operation.
- Parallel remote control and Tally via 20-pin connector.

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QUICK DIAL 72

SONY

UVW-1400A Betacam SP Recorder

The UVW-1400A is a non-editing VCR which deliver Betacam SP quality and offer features for a wide range of playback and recording applications. RGB and RS-232 interface make it especially ideal for large screen, high quality video presentation, scientific research and digital video environments.

- Ideally suited for work in computer environments, because RGB signals can be converted into component signals and vice versa with minimum picture degradation.
- 25-pin serial interface allows external computer control of all VCR functions based on time code information. Baud rate can be selected from between 1200 to 38,400 bps.
- Built-in Time Base Stabilizer locks sync and subcarrier to an external reference signal as well as provides stable pictures.
- Built-in LTC Time Code and UB (User Bits) reader/generator
- Equipped with two longitudinal audio channels.
- Auto repeat of entire or a specific portion of the tape.
- Built-in character generator can display VTR status, time code, self-diagnostic messages, set-up menu, etc.
- Control of jog, shuttle, playback, record, pause, FF and REW with the optional SVRM-100A Remote Control Unit.
- Composite and S-Video as well as component via BNCs which are switchable to RGB output. The UVW-1400A has two switchable sync connectors and a Sync on Green.
- Built-in diagnostic function and hour meter.
- Initial set-up menu for presetting operational parameters.

UVW-1700G
Betacam SP Computer Graphics Frame Recorder

The UVW-1700G has all the features of the UVW-1400A (except foot switch control) plus it adds frame accurate video insert editing capability as well as RS-232 and RS-422 interfaces. These make the UVW-1700G ideal not only for conventional video program production but also for animation and computer graphics creation.

Same features as the UVW-1400A *PLUS*—
Uniquely equipped with both RS-232 and RS-422 serial ports for versatile system integration. Both serial ports are easily accessed via the set-up menu. Built-in time code capability combined with sophisticated servo servo system ensures frame accurate insert editing (video only) when connected to computer-based editing systems (via RS-232 port) or RS-422 equipped edit controllers. Ideal VCR for animation and computer graphics creation, where frame-by-frame editing is indispensable.

UVW-1800 Betacam SP Editing Recorder

All the features of the 1400A *PLUS*—

- Optional UVR-60 allows remote TBC adjustment.
- RS-422 interface for editing system expansion.
- Two types of component output; via three BNC connectors or a Betacam 12-pin dub connector.
- Frame accurate editing is assured, thanks to sophisticated servo control and built-in time code operation. In the insert mode of the UVW-1800, video, audio Ch-1/2 and time code can be inserted independently or in any combination.

QUICK DIAL 731

AutoMedia AutoMasker
World's Only Automated Video-Object Masking Tool

An automated tool for accurate isolation of items and figures in a video clip, AutoMasker quickly marks the border of an object in a key frame and then determines the exact border in subsequent frames—even when the object is multi-colored, changing its geometry or moving over a colorful and dynamic background.

Using break-through technology, AutoMasker enables automated masking, isolation, painting, extracting and insertion of selected objects into video streams at a fraction of the cost using conventional frame-by-frame painting. Selected objects can be modified within AutoMasker or in combination with other effects or compositing software. Compatible with Win 95/NT and standard file formats including: TGA, VDA, ICB, VST, FLM, PCS, DCX, BMP, QT and AVI.

- Easy object selection in first frame and exact boundary tracing in subsequent frames
- Easy modification to object border and controlled anti-aliasing
- Simultaneous masking of a number of objects and objects with holes.
- Create mask or colored output movie, including optional alpha channel
- Independent automatic object and background color effects.

$895.00

MeshPaint 3D
Full-Featured Multi-Platform 3D Paint Program

MeshPaint 3D is a full-featured multi-platform 3D paint program that supports multiple 3D animation applications, including Studio MAX, LightWave 3D, Softimage, Electric Image, Strata Studio Pro and Caligari's trueSpace. With MeshPaint, animators can apply paint and textures to their 3D wireframes in real-time as if they were painting a real-world object with paint and a brush. MeshPaint comes with all the standard paint tools, like air brush, brush hose and clone tool, that one has come to expect in a 2D paint program, but allows them to be used in real-time in 3D. MeshPaint also you to paint across multiple textures that have been assigned to a single 3D object. It supports multiple textures per object and the unique TrU-V allows 3D Studio Max users to paint at face level on an object without being restricted by traditional mapping methods.

For PC (Intel) ..... **189.95** **For PC (Alpha)** ..... **249.95** **For Power Macintosh** **89.95**

GENESIS^{vfx}
Special Effects and Lens Flare Plug-in for LightWave 3D and Studio MAX

Genesis^{vfx}, is a revolutionary special effects plug-in that takes basic properties of physics and harnesses them for use in both still and animated rendering. Genesis^{vfx} can create lens flares, sparkles, glows, heat distortions, 3D particle clouds, gas clouds, explosions, and even flowers with complete animation control over every aspect of the effect. Genesis^{vfx} eliminates the usual limitations of most comparable packages–point light sources or complex object linking are no longer necessary. With Genesis^{vfx} you can link any number of objects of any type. The possibilities are limited only by your imagination! And this power has not been added at the expense of program complexity, indeed there are no lists of parameters with cryptic names and wherever possible real time previews are available to reflect the changes being made.

Genesis^{vfx} incorporates a staggering feature set with advanced rendering options such as full field rendering on all effects (even glows, sparkles), analytic anti-aliasing, full animation of all effects, fractal noise, a completely new object flare effect that makes separate glow/sparkle/flare plug-ins a thing of the past,, particle animation that sets a new standard, a wonderfully user-oriented interface with real time feedback at all possible occasions, FULL advantage of multi-processor systems (both in rendering effects and in user interface), unlimited layering capability, and blindingly fast performance. Full binary compatibility of files between the different versions (eg. create and load Genesis^{vfx} effects interchangeably between LightWave and Adobe Photoshop) and much, much more.

For LightWave 3D (Intel) **$319.95**
For LightWave 3D (Alpha) **$369.95**
3D Studio MAX **$339.95**
For Photoshop (PC or Mac Specify) **$149.95**

QUICK DIAL 732

NewTek
LightWave 3D 5.5
3D Rendering and Animation Software for Broadcast Graphics

LightWave 3D is the easy way to create the most sophisticated 3D animation imaginable. It's intuitive, complete, easy-to-use layout and modeling system deliver the ultimate in creative control, not to mention flexibility. Unparalleled features for modeling, surfacing, lighting and animating are right at your fingertips. Raytracing, motion blur, MetaMation, inverse kinematics (IK), Bones, field rendering, lens flares, compositing - they're all here. And with OpenGL and Quickdraw 3D support you can see your creations in real time. Add a robust plug-in architecture, and it's no wonder you find LightWave 3D in more Hollywood animation suites than any other 3D program. LightWave 3D is available for almost platforms: Windows 95, Windows NT, Power Mac, DEC Alpha, SGI and Sun Microsystems.

LightWave 3D 5.5		Upgrades from LW 5.0 to 5.5		Upgrades from LW 4.0 to 5.5	
For PC (Intel)	1599.00	From Intel 5.0	449.00	From Intel 4.0	599.00
For PC (DEC Alpha)	1599.00	From DEC Alpha 5.0	449.00	From DEC Alpha 4.0	599.00
For Macintosh	1699.00	From Macintosh 5.0	549.00		
For SGI	2499.00	From SGI 5.0	899.00		

INSPIRE 3D
3D Art and Animation Software for Graphic Artists, Multimedia Developers and Web Designers (For Mac or PC)

Specifically designed to meet the demand of the graphics pro, Inspire 3D is a powerful program that lets you add a whole new dimension to your work by creating stunning print images, dynamic multimedia productions and slick web visuals that just aren't possible in 2D. With Inspire 3D, you can model, animate and render 3D elements in any style and complexity. By adding texture, motion, lighting effects and more, your print materials will almost pop off the page. Use the images you create as single frame print graphics or as lower resolution animation files for multimedia or the web or choose from a library of pre-created images. And use the photorealistic or stylized animation images you create for real-time graphics applications, including VRML 2.0, for all kinds of projects.

- Compatible with Photoshop, QuarkXPress, Illustrator, Freehand, Director, and more. Create simple or complex animations, transform Illustrator files into animated 3D graphics, create killer photorealistic 3D or cartoon-style images and use pre-created or custom modeling.
- Supports 16 image and seven 3D model formats, gives you your choice of output with resolutions up to 8,000 x 8,000.
- Expandable modeling capabilities and a ton of plug-ins for specialized functions. Features like Spline-based modeling and MetaNURBs let you mold and manipulate objects in ways you never could before, then output them as hi-res images - fast. Use Insprire's library of designer images, create your own - or mix the two for interactive content, games, training materials and movies.
- Quickly and easily create brilliant single and composite images and animations to design exciting web sites.
- Uses LightWave 3D's formidable rendering engine to put true photorealistic capabilities right on your desktop. Gives your 3D images the edge you're looking for.
- Revolutionary modeler lets you create any shape or form you dream up just by clicking on a few points. Then reshape, subdivide, clone, modify, reposition and control any object in 24-bit color and view it in real-time.
- Compositing capabilities let you to build sophisticated, layered images for print or animation and combine 3D elements with 2D images or multimedia. You can also use photographs or video with 3D elements and apply front projection mapping to make the elements accurately cast shadows against the photo or video image.
- Intuitive interface with on-screen tutorial get you up and running fast. Want the easiest way to composite? Need a tip on shadowing? Curious about surfacing options? The on-screen tutorial is an encyclopedia reference, teacher and consultant that not only gets you up and running quickly, but helps you be more productive every time you work.
- Includes a complete library of over 1,600 models, objects and other items for you to use alone or in combination with other graphic elements.

Inspire 3D for Windows **385.00**
Inspire 3D for Macintosh **385.00**

Adobe AFTER EFFECTS 3.1
Compositing, Motion Graphics & Special Effects for Mac or Windows

After Effects 3.1 provides the power and features required by film makers, video producers, editors, graphic designers, multimedia professionals and web developers to produce unlimited composites, fluid animations and sophisticated special effects. Available for Mac and Windows, After Effects is tightly integrated with the Adobe product family, so if you work with Premier, Photoshop, or Illustrator, you already have the skills, shortcut know-how, and hardware to make After Effects a seamless, powerful extension of your creative arsenal. Turn your computer into a motion-graphics studio and put awe-inspiring action into your work.

SOPHISTICATED COMPOSITING:
- Combine digitized materials from any source to create sophisticated composites and traveling mattes using transparency, complex masks and alpha channels. Animate Photoshop layers and Adobe Illustrator art with direct import capabilities.

MOTION GRAPHICS:
- Position and animate layers with unlimited keyframes and sub-pixel accuracy. View and edit your spline-based motion paths on-screen. Ensure super smooth motion at any speed with field-rendering and true motion blur.

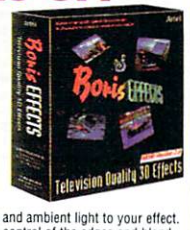
SPECIAL EFFECTS:
- Use use plug-in effects ranging from precise color correction filters to wipes and blurs, and even Photoshop filters. You can also animate each effect independently over time.

AFFORDABLE QUALITY:
- Create anything you can imagine. Get top-quality motion graphics for film, broadcast or CD-ROM— at a fraction of the cost of a dedicated system.

$599

Artel Boris Effects 3.1

A multi-channel DVE generator, complete with intraframe interpolation, matte manipulation, and multiple keyframes, Boris Effects lets you to create your own custom moves. Boris ships with a keyframe library of over 150 customizable effects including cubes, picture-in-picture, chroma keying, tilting,soft edges, masks, filters and compositing of unlimited track of video and graphics. Effects can be saved or used with different video source clips. Create 3D flying logo effects from PICT, TIFF, bitmap, VfW and QuickTime files using an embedded alpha channel. Other features include borders and drop shadows which can be colorized and made soft and translucent, as well as control over camera position and light source with specular highlights. Based on a plug-in architecture, Boris closely integrates into all of today's popular non-linear systems. Once installed, it is easily accessed from their transitions and filters menu. It is not a background application and no extra memory is required.



- Blur and bevel filters.
- Control of image scale (size), positioning, depth and opacity.
- 3D effects with depth control to create cubes or slabs with up to 6 different videos, picts or colors on each of the 6 faces.
- Variable pivot points for unique rotation control.
- Add keyframeable specular and ambient light to your effect.
- Cropping with full softness control of the edges and blend for really smooth soft wipe type of effects.
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For Fast VM-Studio Plus **395.00**
For in:sync Speed Razor **395.00**
For Media 100 ..... **549.95**
For Avid MCXpress NT **549.95**
For Discreet Logic **749.95**
For Avid Xpress (Macintosh) **749.95**
For Avid Media Composer **749.95**

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DPS PVR-2500
'Perception' Digital Video Recorder

The Heart of an Advanced Digital Audio/Video Workstation

The PVR-2500 offers powerful features for awesome animation, morphing and rotoscoping capabilities. With features like 720 x 480 resolution, 10-bit 2x oversampled video encoding, better than D1 scaling, component and S-Video outputs, multi-processor support and integrated FAST SCSI-2 controller, it empowers your computer to rival the finest professional production studios.

- Full-length PCI card with integrated FAST SCSI-2 controller.
- Multi-format virtual file system ensures complete integration with your Windows NT applications. Any acquired video or computer generated Perception video clips appear simultaneously in many different file formats including TARGA, SGI, BMP and IFF. Perception is compatible with Lightwave 3D, Studio Max, SoftImage and others.
- Performs real-time interpolation of 30 fps video to 24 fps film rates or vice versa. This means that it is also at home on the Hollywood movie set as well.
- Outputs broadcast quality 720 x 480 resolution. Dynamic range is in excess of D1 scaling so images are brighter, have more color and greater spatial resolution than ever before. Component, composite and S-Video outputs are provided via the included breakout cables.
- VCR control simplifies the task of batch digitizing and recording. In this mode, the PVR-2500 can read SMPTE time code from the source deck.
- Includes DPS Lockstep plug-in to provide significant control over 3D Studio MAX
- Coupled with the AD-2500 component video capture card, the PVR-2500 becomes a broadcast-quality digital disk recorder. It delivers unsurpassed picture quality, and storage capacity is limited only by the size/number of attached SCSI hard drives.
- The AD-2500 has component, composite and S-Video inputs for real-time recording. Captured video can also be exported as sequential RGB files for rotoscoping and other compositing applications
- When used with the AD-2500 capture card, a sound card, editing software & one or more SCSI drives, the PVR-2500 becomes a non- linear editor of unparalled performance – an unbeatable price.

QUICK DIAL 731

PINNACLE SYSTEMS GeniePlus
Post-Production System on a Single PCI Card

Based on Pinnacle's EMMY award-winning special effects technology, GeniePlus is a complete desktop post-production system that includes a 3-D DVE/switcher, advanced character generator, fast still-store and a dynamic paint system – at a price you can afford. Equipped with an incredible array of features on a single PCI card, GeniePlus lets you create your own stunning effects, including page turns, water ripples and spheres with uncompromised 4:2:2 digital quality. The full-function 3-D DVE provides ultra-smooth motion and no breakup (pixelation) when pictures are sized or rotated. You'll be able to create exciting warp effects with lighting, trails, shadows and borders faster and easier than ever before.

miro DC-30 *plus*
PCI Capture Card for Windows 95/NT

The DC30 *plus* lets you capture, edit, add special effects or titles to your video, mix CD-quality audio, and then output the final cut to video tape. The DC-30 *plus* also offers fast plug and play installation and easy to use software so you'll be producing studio quality video in minutes. It even analyzes your system and automatically configures itself to provide the optimum video quality.

- The DC-30 is a PCI Bus mastering card that delivers a 6MB per second sustained video data transfer rate for high quality video capture. PCI Bus mastering ensures CPU bottlenecks don't impede the performance of the PCI bus, thereby limiting the reachable video transfer data rate.
- 2.4:1 compression ratio (adjustable up to 32:1). A lower compression ratio means a better final video image quality. Compression ratios under 4:1 are considered to be "broadcast quality."
- Real-time video overlay displays the video in real-time on the computer monitor during capture and video editing process eliminating the need for an external video monitor.
- Full NTSC, PAL, SECAM, PAL M for worldwide compatibility.
- Audio and video capture is synchronized to achieve perfect lip-sync. (Capture from 8-bit mono 11kHz to 16-bit stereo 44.1kHz.
- Hardware acceleration of Adobe Premiere provides almost instant display of video "thumbnails" in the construction window (under one second). Acceleration also reduces the time to create "previews" and final video clip with "make movie".
- Bundled with Adobe Premiere 4.2 full version, Photoshop 3.05 LE and Asymetrix 3D/FX animation software.

DC-30 *plus* for Windows **799.00**

Miro DC-30 *plus* Turnkey System:

- 220-watt midtower case • Pentium 200 MHz MMX processor • PCI motherboard with 512K cache
- Diamond Stealth 3D 3000 4MB DRAM PCI display card • 64MB of RAM • Quantum 3.2 GB IDE system drive
- Seagate (Barracuda) 9GB SCSI-2 FAST/Ultra-wide hard drive • Adaptec AHA-2940UW FAST/Wide SCSI-2 controller
- 3.5" floppy drive • Teac CD-532E 32X EIDE internal CD-ROM drive • Altec-Lansing ACS-43 2-piece speaker system
- Focus 2001A keyboard • Microsoft MS mouse • Viewsonic G771 17-inch 1280 X 1024 SVGA monitor
- Windows 95 • Miro DC-30*plus* video/audio capture card
- Adobe Premiere 4.2 (full version) editing software, Adobe Photoshop 3.05 LE imaging software and Assymetrix 3-D F/X animation software **$3695.00**

DV-300 IEEE 1394 Digital Video Capture Card

A digital video capture, editing, and playback solution for Windows 95/NT and MacOS , the DV-300 is built around an intuitive software application that offers frame-accurate DV camera control, uncompromised image quality, and the ability to intelligently search digital videotapes for individual scenes. Additionally, the DV300 differentiates itself by providing a built-in SCSI port for connection to high speed drives.

DV-300 Hardware:

- PCI board with bus mastering interface
- Includes 1394 cable
- One internal and two external DV connections
- Bundled with Adobe Premiere 4.2 LE
- Convert your DV data for editing with other miroVIDEO editing adapters (e.g. miroMOTION DC30, DC30 plus.)

DV-300 DVTools Software:

DVTools automatically scans the DV tape and finds scene in and out points. The Camera Controller allows for previewing before down loading any data. Scene locations with timecode are organized in the drag-and-drop Capture Gallery. Scenes can be trimmed so only the video you want is captured, saving you valuable hard drive space.
Once you have arranged the scenes to edit, DVTools will automatically cue the camera and capture them.

Segments can be arranged for a cuts only production, or loaded into Premiere for effects and transitions. miroINSTANT DV, a plug-in for Premiere renders only effects and transitions, saving up to 50% of your hard drive space by not re-rendering the video clips. The video and the effect segments are then stored as individual video files. When production is finished, outout to the camera through the IEEE1394 link. From Premiere, miroINSTANT DV automatically prints files back to tape in one pass, overcoming the 2 GB movie size limitation.

QUICK DIAL 731

FAST DV Master

Unlike software-based DV systems that can be as slow as six times real-time, DV Master incorporates Sony's DVBK-1 DV hardware CoDec to guarantee lossless transmission at top speed. With just one cable you can transfer video, sound and machine control signals in real-time. Also allows the display of live video during "capture", as well as at any time during the editing process. You can scrub in or trim the timeline, and then preview it in real-time at full-screen, full-motion on your video or computer monitor.
Another advantage of having the Sony DVBK-1 on the board, is that it allows the DV Master to act as a real-time video transcoder. Using the supplied break-out box, you can simultaneously convert analog composite, S-Video and component into digital and vice versa. This is ideal for archiving analog footage onto digital as well as for mixing analog and digital footage when editing. It also allows you to transfer edited digital footage directly to S-VHS or Betacam SP without having to first go back to the camera.

Bundled Software:
Includes Sonic Foundry Sound Forge audio editing software, and a choice of editing software: Ulead MediaStudio Pro 5.0, full version of Adobe Premier 4.2 or special version of in:sync Speed Razor MACH 4.

canopus DVRex-M1
The Complete DV Digital Video Editing System

The DVRex-M1 is a hardware and software bundle that offers a complete solution for capture, output and editing of DV (Digital Video) signals. Equipped with Sony's DVBK-1 hardware DV codec, a breakout box and ULead's Media Studio Pro 5.0, the DVRex-M1 provides real-time capture and output of DV signals from your camera or VCR via the IEEE1394 port, or converts any analog video and audio to DV. The system also includes Rex Edit software so you can control your DV camera or deck, batch capture video and audio, add new audio tracks and scrub in real-time. DV editing has never been so fast, easy and flexible!

Hardware Features:

- High quality, scalable video windows displays real-time, full-screen video during capture, editing and output.
- During analog capture and output, video characteristics like brightness, contrast, saturation etc. can be manually set.
- When incorporating effects, an optimized hardwared DV codec cuts rendering time up to 25%.
- Unique DV breakout box can be used either externally or internal in a 5-1/4" drive bay. The box features composite and S-Video input/output, DV input/output and analog stereo input/output. With the optional M2 module it can also output component video signals and input/output digital audio signals (RCA and optical).

Rex Edit Software Features

Manual and Batch Capture:
- Capture up to 20 minutes (4GB) into one AVI file
- Seamlessly capture long DV segments in one pass (over 20 minutes)
- Capture audio from single of multiple DV channels if desired
- Frame accurate camera control when defining a batch list of video clips
- When batch capturing, camera automatically seeks to clips
- Batch clips can be stored in one or multiple AVI files

Editing:
- Easy to use drag-and-drop interface with audio and video timeline. Manually scrub through the timeline using a Microsoft IntelliMouse
- Real-time video insert and audio scrubbing
- Video can be output directly from the timeline with seamless playback
- Works together with ULead's MediaStudio Pro 5.0 (bundled with DVRex-M1) for effects and titling

Multi-Channel Audio Input and Output with Mixing:
- Capture and output native DV multi-channel audio
- Audio is perfectly synced with video during production and output
- Overcomes AVI single channel limitations with real-time audio mixing
- Multi-channel audio requires no rendering for real-time adjustment and output

TRUEVISION / AVID
TARGA 1000/MCXpress
Professional Video Production Workstation

Incorporating the award-winning TARGA 1000 video card and Avid MCXpress NT non-linear editing software, this fully-configured workstation meets the needs of production professionals, corporate communicators, educators and Internet authors.

TARGA 1000 Features:

The TARGA 1000 delivers high processing speed for video and audio effects, titling and compositing. Capture, edit and playback full-motion, full-resolution 60 fields per second digital video with fully synchronized CD-quality audio.

- Compression can be adjusted on the fly to optimize for image quality and/or minimum storage space. Has composite and S-video inputs/outputs. Also available with component input/output (TARGA 1000 PRO).
- Genlock using separate sync input for working in professional video suites
- Audio is digitized at 44.1KHz or 48KHz sampling rates, for professional quality stereo sound. Delivers perfectly synchronized audio and video.

MCXpress Features:

The ideal tool for video and multimedia producers who require predictable project throughput and high-quality results when creating video and digital media for training, promotional/marketing material, local television and cable commercials, CD-ROM and Internet/intranet distribution. Based on Avid's industry-leading technology, it combines a robust editing functionality with a streamlined interface. Offers integration with third-party Windows applications, professional editing features, powerful media management, title tool and a plug-in effects architecture. It also features multiple output options including so you save time and money by reusing media assets across a range of video and multimedia projects.

TARGA 1000/MCXpress Turnkey Systems:

- 300-watt, 6-Bay Full Tower ATX Chassis
- Pentium ATX Motherboard with 512K Cache
- Pentium II- 300 MHz Processor
- Matrox Millenium II AGP 4MB WRAM Display Card
- 64MB 10ns 168-Pin (DIMM) S-DRAM
- Quantum Fireball 6.4GB IDE System Drive
- Seagate Barracuda External 9.1GB SCSI-3 Ultra Wide Capture Drive
- Adaptec AHA-2940UW Ultra Wide SCSI-3 Controller Card
- Teac CD-532e 32X EIDE Internal CD-ROM Drive • 3.5" Foppy Drive
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- Viewsonic G771 17-inch (1280 x 1024) Monitor (0.27mm dot pitch)
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- Windows NT 4.0 Operating System Software
- Avid MCXpress for Windows NT
- Truevision TARGA 1000 or 1000 Pro Video Capture Card

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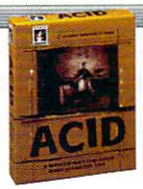

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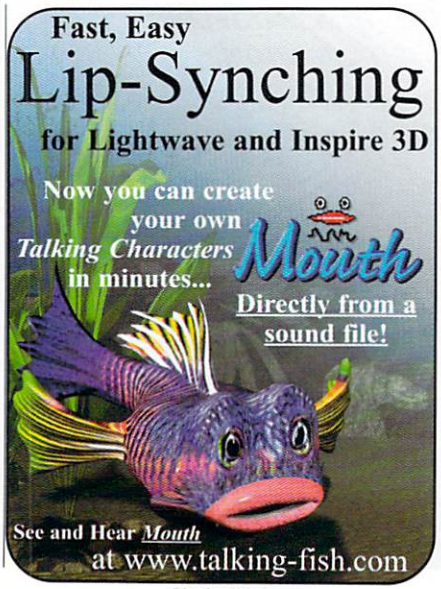

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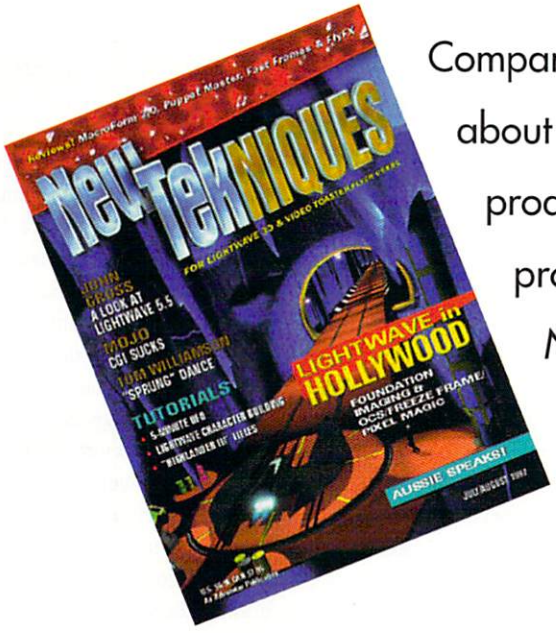

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Mojo proposes a quality-based pricing scale for movie tickets.

BY MOJO

How Much Would You Pay?

My Scheme for Pricing the Movies

Edgar Bronfman Jr., CEO of Seagram's (and therefore Universal Studios) recently said, "We, as an industry, charge consumers the same amount to see a movie that costs $2 million as we do for one that costs $200 million. This is a price model which makes no sense and I believe the entire industry should and must revisit it."

Is he for real? Is he actually implying that I should have paid more to see *Godzilla*?!

Or that an over-inflated turkey like *Armageddon* should have cost ten bucks a pop while a small, independent (and vastly superior) film like *Last Days of Disco* should only be allowed to charge a dollar?

I know the entertainment business is driven purely by greed, but come on, dude. You don't seriously expect us to believe that a system which generates billions of dollars in profits a year needs to be overhauled, do you?

So what does prompt the owner of a giant movie studio to want to change this system? One word, folks: *WATERWORLD*. Trust me—if you had laid out $200 million for a flop like that, you'd be spending your nights trying to think of ways to pay for it, too!

Charging more for expensive movies simply will not work because, in the end, you're just not going to get a lot of consumers to pay top dollar for a poor product—no matter how much it cost you to make! They don't care and won't be forced to subsidize shoddy workmanship.

But this is exactly what Mr. Bronfman would like us to do! He thinks that because *Waterworld* cost a lot of money to make, we should pay a lot of money to see it.

Well, sir, you're wrong. Nobody cares that it cost you a ton of money to make a film about the ocean that should have been thrown into the ocean. All we care about is whether it's good or not, and if your movie sucks, you can stick your big budget where the sun don't shine, because we sure ain't gonna pay more to see it!

You want to change the pricing structure of movie tickets? You want a new system that will be fair to everyone, yet will still price on a sliding scale? Hey, no problem—simply charge according to how good the movie is! I'll even tell you how to do it. You round up a few hundred people in a handful of cities, show them the film for free at a screening, and have them rate it on a scale of one to ten. The average rating becomes your ticket price when the film is released.

Wasn't that easy? Let's put it to the test! Would you have paid ten bucks to see *The Truman Show*? And how much better would you have felt if *Godzilla* had only cost a buck? See? Problem solved!

And, don't tell me my idea is too radical or too different, because there is already a system like this in place—it's called television. TV ratings (based on a sampling of the public, just like my movie system) determine advertising rates. This money is what pays for the shows you watch. Shows with high ratings make a lot of money and those with low ratings don't earn as much. The bottom line? Good shows make more money than bad shows. Television has worked this way for fifty years and I don't hear any studios complaining about that system—so why not apply the same principal to movies?

In fact, this new system would revolutionize the film industry. Not only would we be getting what we paid for, and not only would the studios be getting what they deserve, but for the first time in history, the executives at the studios would be genuinely concerned with how good their movies were! Instead of throwing gobs of cash at special effects, while shooting with half-finished scripts, you'd actually hear a producer say, "Well, I'm glad you've hired ILM, but do you really think Joe Esterhaus is up to writing *Casablanca II*?"

We'd actually get good movies, because the studios would know that only the good films get to charge top dollar. Sure, it's hard to predict what people will like, but the problem now is that no one in control seems to even care anymore. Now, they've finally woken up and realized that their mega budget, special-effects ridden opuses can quite easily bomb and that enough of these bombs can put them out of business. If they think they can save themselves by forcing us to pay more for this crap, they've got another thing coming.

This summer's expensive duds did not fail because they cost too much to make; they failed because they blew chunks and no one wanted to go see them. So the answer, Mr. Bronfman, is not to charge more to see bad movies. The answer is to just make good ones. And, if you continue to insist on a new pricing system for the movies, remember one time-honored piece of advice: be careful what you wish for...

Mojo is a supervising animator at Foundation Imaging.

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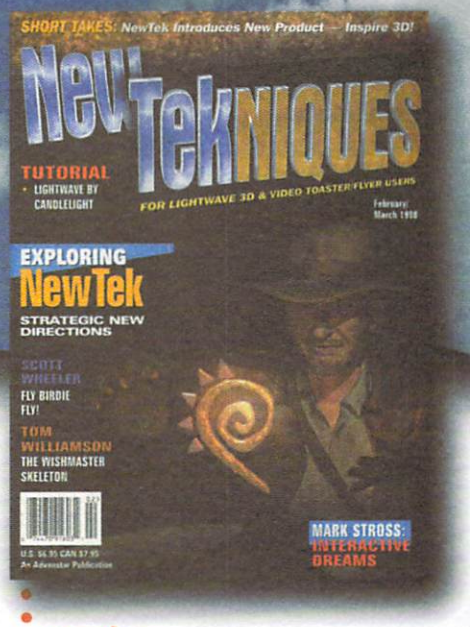

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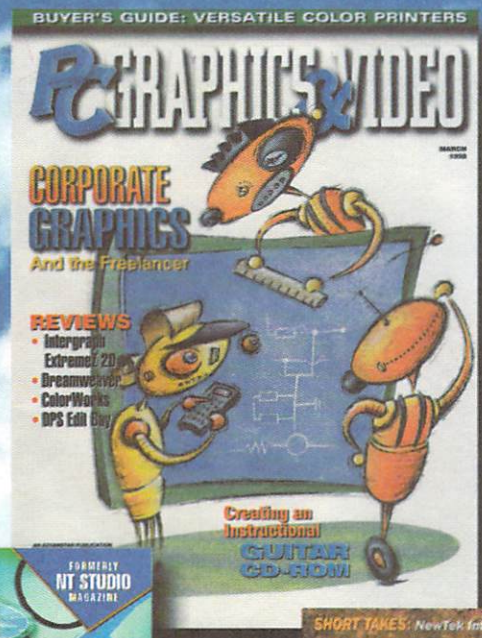

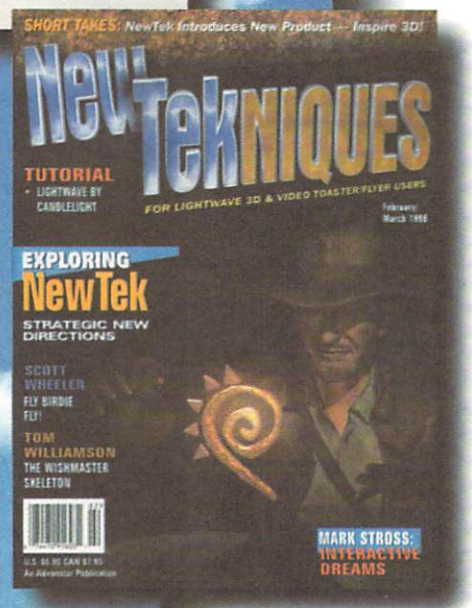

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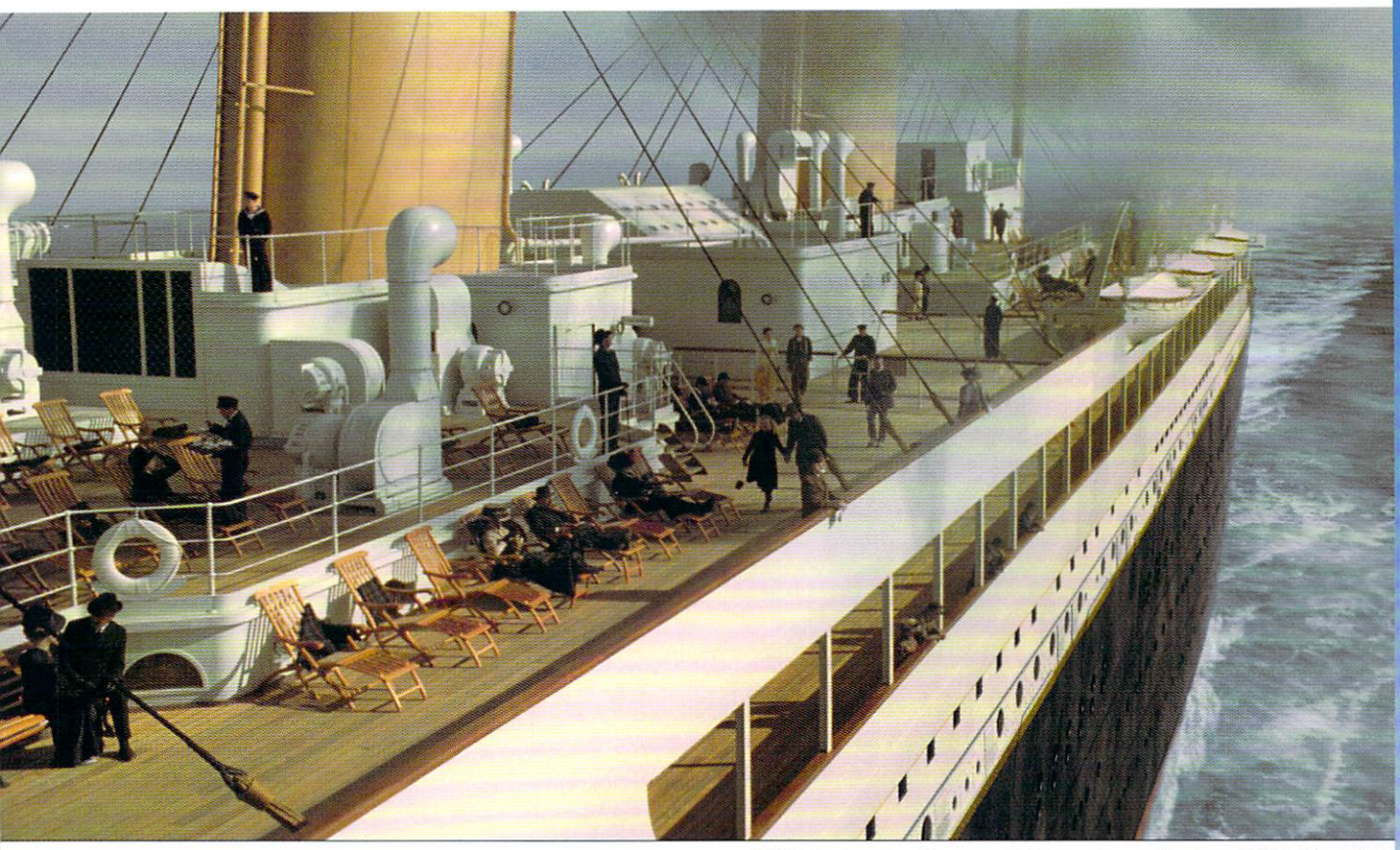
LightWave 3D 5.5

"Titanic really shows what computer animation can do for a film. We're very proud of it."



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"Titanic was big in every way. A big film. A big challenge. And, in the end, a big reward. But the trick with the animation was to achieve the look and result James Cameron was going for.

As huge as the Titanic set was, we still had to add the hull and extensions to the scenes. And when the treasure seekers tell Old Rose what happened to the ship that night, it's computer animation that visualizes the story.

We chose LightWave 3D to bring it to life. Its speed, workflow and how easy it is to learn and use are terrific. That's important, because our artists are so exacting about quality, we tinker endlessly on details other people may never even see. But doing that means constant review and feedback. So, the faster we can go from idea to visual in film or commercial work, the more time we have to review and get exactly what we're after. LightWave 3D gives us that time.

LightWave 3D also lets you model, animate, light and render in one package – which speeds up the creative process.

With Titanic, we had a wonderful chance to tell a story…and with LightWave 3D, we had a great means of achieving that."

– Edward Kummer, Vice-President of Digital Operations, Digital Domain

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